ÚSTAV POLYMÉROV SAV, BRATISLAVA



SPRÁVA O ČINNOSTI ZA ROK 2015

Bratislava, január 2016

Obsah Správy o činnosti Ústavu polymérov SAV za rok 2015

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1. Základné údaje o organizácii

1.1. Kontaktné údaje

Názov: Ústav polymérov SAV
Riaditeľ: Ing. Igor Lacík, DrSc.
1. zástupca riaditeľa: Mgr. Jaroslav Mosnáček, PhD.
2. zástupca riaditeľa: Ing. Zuzana Hloušková
Vedecký tajomník: Ing. Mária Omastová, DrSc.
Predseda vedeckej rady: RNDr. Peter Cifra, DrSc.
Člen snemu SAV: neuvedený
Adresa: Dúbravská cesta 9, 845 41 Bratislava 45

http://www.polymer.sav.sk

Tel.: 02/ 3229 4308
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E-mail: upolsekr@savba.sk
Názvy a adresy detašovaných pracovísk:

- **Detašované pracovisko Ústavu polymérov SAV**
  ul. Gen. Svobodu 1069/4, 958 01 Partizánske

Vedúci detašovaných pracovísk:

- **Detašované pracovisko Ústavu polymérov SAV**
  Prof. Ing. Ivan Chodák, DrSc.

Typ organizácie: Príspevková od roku 1993

1.2. Údaje o zamestnancoch

Tabuľka 1a Počet a štruktúra zamestnancov

Štruktúra zamestnancov	K	K		K do 35 rokov		F	P	T
		M	Ž	M	Ž			
Celkový počet zamestnancov	83	29	54	5	23	80	58,8	43,58
Vedeckí pracovníci	42	20	22	0	13	39	32,26	32,26
Odborní pracovníci VŠ	26	6	20	5	10	26	12,52	11,32
Odborní pracovníci ÚS	11	1	10	0	0	11	11,22	0
Ostatní pracovníci	4	2	2	0	0	4	2,8	0

K – kmeňový stav zamestnancov v pracovnom pomere k 31.12.2015 (uvádzať zamestnancov v pracovnom pomere, vrátane riadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí, v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zboroch)
F – fyzický stav zamestnancov k 31.12.2015 (bez riadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zboroch)
P – celoročný priemerný prepočítaný počet zamestnancov
T – celoročný priemerný prepočítaný počet riešiteľov projektov
M, Ž – muži, ženy

Tabuľka 1b Štruktúra vedeckých pracovníkov (kmeňový stav k 31.12.2015)

Rodová skladba	Pracovníci s hodnosťou				Vedeckí pracovníci v stupňoch		
	DrSc.	CSc./PhD.	prof.	doc.	I.	IIa.	IIb.
Muži	7	13	2	0	7	10	3
Ženy	1	21	0	0	1	2	19

Tabuľka 1c Štruktúra pracovníkov podľa veku a rodu, ktorí sú riešiteľmi projektov

Veková štruktúra (roky)	< 31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	> 65
Muži	5	0	4	5	1	1	1	4	3
Ženy	15	8	5	0	1	2	5	3	0

Tabuľka 1d Priemerný vek zamestnancov organizácie k 31.12.2015

	Kmeňoví zamestnanci	Vedeckí pracovníci	Riešitelia projektov
Muži	47,5	51,1	46,2
Ženy	41,4	35,5	38,6
Spolu	43,6	42,9	41,5

1.3. Iné dôležité informácie k základným údajom o organizácii a zmeny za posledné obdobie (v zameraní, v organizačnej štruktúre a pod.)

V roku 2015 sa skončilo funkčné obdobie vedúceho Oddelenia syntézy a charakterizácie polymérov Štefana Chmelu, DrSc, ktorý dosiahol vek 65 a preto nemohol naďalej zastávať túto funkciu. Na základe konkurzu, ktorý uskutočnil v máji 2015, bol od 1.06.2015 vymenovaný za vedúceho oddelenia Mgr. Jaroslav Mosnáček, PhD, ktorý bol jediným kandidátom.

V roku 2015 sa Ústav polymérov SAV opäť podieľal na príprave niekoľkých projektov v rámci Horizont 2020, avšak zatiaľ žiaden z nich nebol podporený pre financovanie. Tieto projekty všeobecne predstavujú kvalitatívny rast pre zúčastnených vedeckých pracovníkov a doktorandov a tiež prispievajú k ekonomickej situácii ústavu. Preto i pre rok 2016 podávanie projektov v rámci nového programu EU pre podporu vedy a výskumu Horizont 2020 bude predstavovať jednu z priorít pre budúci rast ústavu. Okrem toho bolo v novembri podaných celkovo 24 APVV projektov (z toho v 9 je ÚPo nositeľom projektu a v 15 sa zmluvne podieľa na riešení projektu), ktoré budú vyhodnotené v prvej polovici roku 2016. Vedeckí pracovníci ÚPo riešili dva projekty spolupráce SAV s Tureckom, resp. Taiwanom, a podieľali sa na príprave troch M-ERA.NET projektov.

V rámci snahy o zefektívnenia vedeckej ale i vzdelávacej spolupráce so slovenskými univerzitami sa uskutočnila prezentácia nových trendov v polymérnej chémii a syntetických tém riešených na ÚPo SAV študentom chémie na PriF UK v období rozhodovania sa o výbere témy ich bakalárskej práce. Na základe tejto prezentácie sa podarilo získať na ústav jednu študentku na bakalársku prácu a dve študentky ako vedeckú pomocnú silu. Do budúcnosti je potrebné zvážiť akým spôsobom aktívnejšie a efektívnejšie prezentovať ÚPo SAV medzi študentami vysokých škôl a zefektívniť získavanie kvalitných doktorandov z ich radov.

Riaditeľ ÚPo SAV inicioval vznik Externej rady riaditeľa ako ďalšej aktívnej zložky štruktúry ústavu s cieľom kontinuálneho externého pohľadu na činnosť ústavu. Členstvo v tejto rade prijali Prof. Dr. Christos N. Likos z University of Vienna, Dr. František Rypáček z ÚMCh AV ČR, v.v.i. Praha, Prof. György Marosi z University of Technology and Economics Budapešť, Prof. Robert Liska z Vienna University of Technology a Dr. Jozef Krištofčák zo Saneca Pharmaceuticals a.s.

Hlohovec. Počas zasadnutia Externej rady na ÚPo SAV jej členovia ocenili pozíciu, v akej sa ústav nachádza, a poskytli odporučenia pre ústav, ktoré je možné zhrnúť do nasledovných bodov: (i) znížiť prílišnú projektovú diverzitu a početnosť, (ii) definovať kmeňové témy a excelentnosť, (iii) zmeniť personálnu štruktúru (malý počet doktorandov a dočasných post-doktorandov), (iv) zvýšiť zviditeľnenie ústavu cez kvalitné projekty, kvalitné publikácie, prezentácie na kvalitných konferenciách, organizáciu konferencií, spoluprácu s priemyslom a (v) mať reálne ambície.

Na podnet P SAV bola zadefinovaná misia ÚPo SAV:

- Misiou Ústavu polymérov SAV je excelentný výskum v oblasti syntetických polymérov, prírodných polymérov a polymérnych materiálov, ktorý je zameraný na prepojenie základného a aplikovaného výskumu v aktuálnych témach polymérnej chémie a prispieva v globálnom meradle k poznatkom v tejto oblasti.
- Ústav je výskumným a vzdelávacím centrom, ktorý paralelne s výskumnou činnosťou pôsobí ako externá vzdelávacia inštitúcia v oblasti makromolekulovej a fyzikálnej chémie ako aj v ďalších relevantných vedeckých odboroch.
- Ústav zároveň poskytuje špecializovaný odborný servis zahrňujúci odborné konzultácie, infraštruktúru a inovatívne riešenia pre akademických, univerzitných a priemyselných partnerov v národnom aj medzinárodnom prostredí.
- V národnom prostredí ústav predstavuje významný pilier výskumu v oblasti polymérnej chémie a zabezpečuje informovanosť verejnosti o výskumných aktivitách, získaných výsledkoch a aplikáciách.

2. Vedecká činnosť

2.1. Domáce projekty

Tabuľka 2a Počet domácich projektov riešených v roku 2015

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2015 (v €)		
			A		B
	A	B	spolu	pre organi-záciu	
1. Vedecké projekty, ktoré boli r. 2015 financované VEGA	18	0	109851	-	-
2. Projekty, ktoré boli r. 2015 financované APVV	6	10	139112	-	98711
3. Projekty OP ŠF	0	1	-	-	32054
4. Projekty centier excelentnosti SAV	0	1	-	-	-
5. Iné projekty (FM EHP, ŠPVV, Vedecko-technické projekty, ESF, na objednávku rezortov a pod.)	0	1	-	-	39070

A - organizácia je nositeľom projektu *B - organizácia sa zmluvne podieľa na riešení projektu*

Tabuľka 2b Počet návrhov domácich projektov podaných v roku 2015

Štruktúra projektov	Miesto podania	Organizácia je nositeľom projektu	Organizácia sa zmluvne podieľa na riešení projektu
1. Účasť na nových výzvach APVV r. 2015	-	**9**	**15**
2. Projekty výziev OP ŠF podané r. 2015	Bratislava		
	Regióny		

2.2. Medzinárodné projekty

2.2.1. Medzinárodné projekty riešené v roku 2015

Tabuľka 2c Počet medzinárodných projektov riešených v roku 2015

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2015 (v €)		
	A	B	A		B
			spolu	pre organi-záciu	
1. Projekty 7. Rámcového programu EÚ	0	1	-	-	-
2. Multilaterálne projekty v rámci vedeckých programov COST, ERANET, INTAS, EUREKA, ESPRIT, PHARE, NATO, UNESCO, CERN, IAEA, ESF (European Science Foundation), ERDF a iné	2	8	8750	-	24960
3. Projekty v rámci medzivládnych dohôd o vedecko-technickej spolupráci	0	0	-	-	-
4. Bilaterálne projekty	13	2	4000	2350	17940
5. Podpora medzinárodnej spolupráce z národných zdrojov (MVTS, APVV,..)	3	7	31080	-	21531
6. Iné projekty financované alebo spolu-financované zo zahraničných zdrojov	3	2	76591	-	106327

A - organizácia je nositeľom projektu *B - organizácia sa zmluvne podieľa na riešení projektu*

2.2.2. Medzinárodné projekty v 7. RP EÚ a Horizont 2020 podané v roku 2015

Tabuľka 2d Počet projektov 7. RP EÚ a Horizont 2020 v roku 2015

	A	B
Počet podaných projektov Horizont 2020	0	6

A - organizácia je nositeľom projektu *B - organizácia sa zmluvne podieľa na riešení projektu*

2.2.3. Zámery na čerpanie štrukturálnych fondov EÚ v ďalších výzvach

1. Ústav polymérov SAV je zapojený do projektu SAV 664337 CEMEA Building-up Centre of Excellence/ for advanced materials application, starting date 01/06/2015, call H2020-WIDESPREAD-2014-1 (zapojené sú tri oddelenia: OPVB, OSChP, OKM)
2. Oddelenie pre výskum biomateriálov je zapojené do prípravy Dlhodobého strategického výskumného programu pre konkrétnu oblasť špecializácie z pohľadu dostupných vedeckých a výskumných kapacít RIS3 SK, oblasť Biotechnológia a biomedicína.

2.3. Najvýznamnejšie výsledky vedeckej práce

2.3.1. Základný výskum

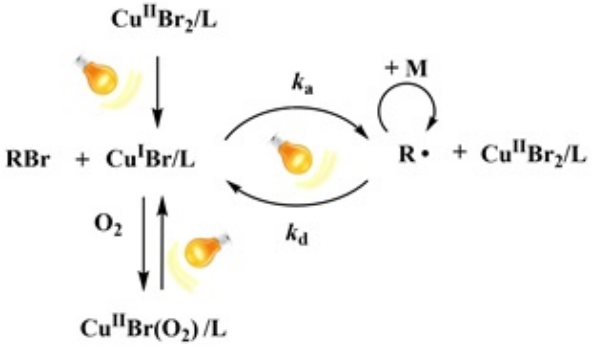
1) Názov: **Fotochemicky indukovaná radikálová polymerizácia s prenosom atómu (fotoATRP) v prítomnosti limitovaného množstva vzduchu.**
Photochemically induced atom transfer radical polymerization (photoATRP) in the presence of limited amount of air.

Ústav polymérov SAV

Mená riešiteľov J. Mosnáček, K. Borská, A. Eckstein, D. Moravčíková

Projekty v rámci ktorých sa výsledok dosiahol: CE FUN-MAT

V hodnotenom období sa optimalizovali podmienky fotochemicky indukovanej ATRP (met)akrylátov v prítomnosti vzduchu. Ukázalo sa, že fotoATRP je možné uskutočniť i za prítomnosti malého množstva vzduchu, keďže CuBr/L katalyzátor, ktorý sa v prítomnosti kyslíka oxiduje na CuBr(1/2O_2) je možné spätne fotochemicky redukovať na CuBr/L, pričom dochádza k postupnému spotrebovaniu kyslíka v systéme. Následná polymerizácia potom prebieha bez výrazného narušenia kontroly nad molekulovými charakteristikami polyméru alebo živosti koncov polymérneho reťazca. Polymerizácia nabieha po indukčnej perióde, počas ktorej sa kyslík v systéme spotrebúva. Indukčnú periódu je možné výrazne skrátiť pridaním nadbytku ligandu L, na báze terciárneho amínu, ktorý sa pravdepodobne zúčastňuje fotochemickej redukcie zoxidovaného katalyzátora v systéme. Tento výsledok má veľký priemyselný význam, keďže nie je potrebné uskutočňovať časovo ale i finančne náročné odvzdušňovanie polymerizačného systému.



Navrhnutý mechanizmus pre fotochemicky indukovanú radikálovú polymerizáciu s prenosom atómu (fotoATRP)v prítomnosti kyslíka

Výstupy:

1. MOSNÁČEK, Jaroslav - ECKSTEIN-ANDICSOVÁ, Anita - BORSKÁ, Katarína. Ligand effect and oxygen tolerance studies in photochemically induced copper mediated reversible deactivation radical polymerization of methyl methacrylate in dimethyl sulfoxide. In *Polymer Chemistry*, 2015, vol. 6, p. 2523-2530. (5.520 - IF2014). ISSN 1759-9954. Typ: ADCA
2. BORSKÁ, Katarína – MORAVČÍKOVÁ, Daniela – ECKSTEIN-ANDICSOVÁ, Anita – MOSNÁČEK, Jaroslav. Study of photochemically induced atom transfer radical polymerization of (meth)acrylates in the presence of oxygen. *In 67. Zjazd Chemikov* : *Starý Smokovec, Slovensko, 9-11 September, 2015, program and book of abstracts*. - ChemZi 11/1 (2015), 3P02. ISSN 1336-7242. Typ: AFH
3. MOSNÁČEK, Jaroslav. Atom transfer radical polymerization (ATRP): Development of photoATRP and hybrid materials prepared by ATRP. *Prezentácia na dvoch Taiwanských univerzitách – National Chung Cheng University, Chia-Yi a National Chung Hsing University, Taichung*

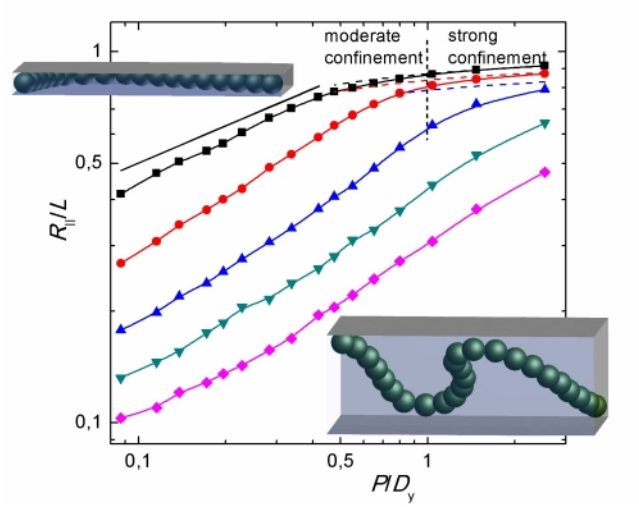
2) Názov: **Nanoštruktúra v makromolekulových systémoch indukovaná stesnaním**.
Nanostructure in macromolecular systems induced by confinement.

Ústav polymérov SAV

Mená riešiteľov: Z. Benková, P. Cifra, P. Námer

Projekty v rámci ktorých sa výsledok dosiahol: APVV-0451-11

V náväznosti na štúdie lineárnych makromolekúl a ich linearizácie v nanokanáloch s asymetrickým profilom až v limite úzkych pásikov bolo vyšetrené správanie dlhých cyklických makromolekúl. Vo všetkých geometriách sa potvrdilo očakávanie silnejšieho relatívneho vystierania makrocyklov oproti lineárnym polymérom, ktoré vyplýva zo silnejšieho vylúčeného objemu v cykloch stiesnených kanálom. V prípade makrocyklu stiesneného v kanáli vo forme úzkeho pásiku sa toto vystieranie ešte zosilňuje vplyvom prechodu ku dvojrozmernému systému, ktorý taktiež prispieva ku zosilnenej linearizácii a je už popísaný pre lineárne polyméry. Tieto zistenia budú mať implikácie pre jednomolekulové charakterizácie makrocyklickej DNA v nanofluidných zariadeniach.



Predĺženie lineárnej makromolekluly v nanokanáli v závislosti od dvoch smerov obmedzovania.

Výstupy:

1. BENKOVÁ, Zuzana - NÁMER, Pavol - CIFRA, Peter. From stripe to slab confinement for linearization of macromolecules in nanochannels. In *Soft Matter*, 2015, vol. 11, p. 2279-2289, (4.151- IF2014). Typ: ADCA

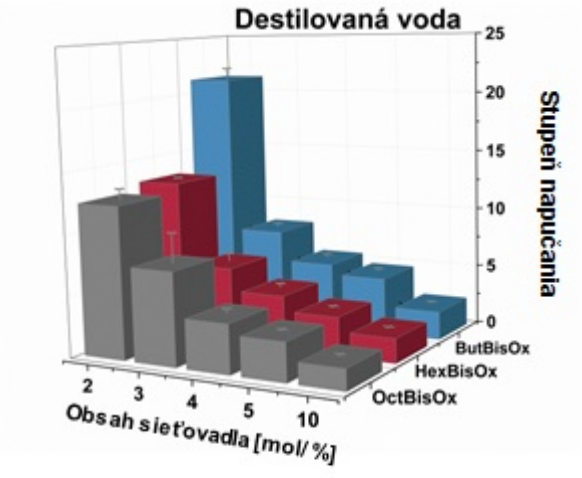
3) Názov: **Hydrogély na báze poly(2-oxazolínov) s nastaviteľnými vlastnosťami**.
Hydrogels based on poly(2-oxazolines) with adjustable properties.

Ústav polymérov SAV

Mená riešiteľov: A. Zahoranová, J. Kronek, Z. Kroneková

Projekty v rámci ktorých sa výsledok dosiahol: VEGA 2/0163/15 a 2/0156/15

V uplynulom období bolo naše úsilie zamerané na prípravu a charakterizáciu hydrogélov presietených bis(2-oxazolínovými) sieťovadlami. V rámci tejto štúdie sa pripravili série hydrogélov s rôznou dĺžkou alifatického spojovníka (butylén, hexylén a oktylén) a rôznou hustotou siete, pričom sledoval sa vplyv týchto štruktúrnych parametrov na výsledné vlastnosti hydrogélov. Zistilo sa, že kombináciou dĺžky alifatického spojovníka a hustoty siete je možné pripraviť hydrogély s rovnovážnym stupňom napučnia vo vode od 2 do 20 a Youngovým modulom v rozmedzí 10 až 100 kPa. Pripravené hydrogély boli tiež



Stupeň napučania hydrogélov v závislosti od obsahu sieťovadla a jeho typu

hodnotené z hľadiska interakcie s bunkovými líniami. Zistilo sa, že hydrogély pripravené z butylénového sieťovadla preukazovali najnižšiu mieru toxicity a najvyššiu mieru viability buniek počas kultivácie v štruktúre hydrogélu. Použitie bis(2-oxazolínových) sieťovadiel s rôznou dĺžkou alifatického reťazca umožňuje presnejšiu kontrolu nad vlastnosťami hydrogélov (stupeň napučania, Youngov modul) a takéto gély môžu slúžiť ako platforma na kultiváciu neadherentných bunkových línií.

Výstupy:

1. ZAHORANOVÁ, Anna – KRONEKOVÁ, Zuzana – ZAHORAN, M. – CHORVÁT, Jr., D. – JANIGOVÁ, Ivica - KRONEK, Juraj. Poly(2-oxazoline) hydrogels crosslinked with aliphatic bis(2-oxazolines): Properties, cytotoxicity, and cell cultivation. In Journal of Polymer Science, Part A: Polymer Chemistry2015, online verzia, DOI 10.1002/pola.28009, ISSN 0887-624X, Typ: ADCA.
2. ZAHORANOVÁ, Anna - KRONEK, Juraj. Hydrogels based on poly(2-oxazolines) for pharmaceutical applications, InHandbook of Polymers for Pharmaceutical Technologies, Wiley-Scrivener, 2015, volume4, chapter 10, p. 231-258. ISBN 9781119041467, Typ: ABC.
3. ZAHORANOVÁ, Anna - KRONEKOVÁ, Zuzana - ZAHORAN, M. - CHORVÁT, D. Jr. - KRONEK, Juraj. 2-Ethyl-2-oxazoline-based hydrogels as matrices for cell cultivation. In Epf DRESDEN 2015. European Polymer Congress: Book of abstracts. - Dresden, 2015, p. 180. Typ: AFG

2.3.2. Aplikačný typ

1) Názov: **Kinetika radikálovej polymerizácie a stanovenie rýchlostných konštánt so zameraním na polymerizáciu vo vodnej fáze**.
Kinetics of radical polymerization and determination of rate coefficients focused on polymerization in aqueous solutions.

Ústav polymérov SAV

Mená riešiteľov: I. Lacík, A. Chovancová, E. Hipká.

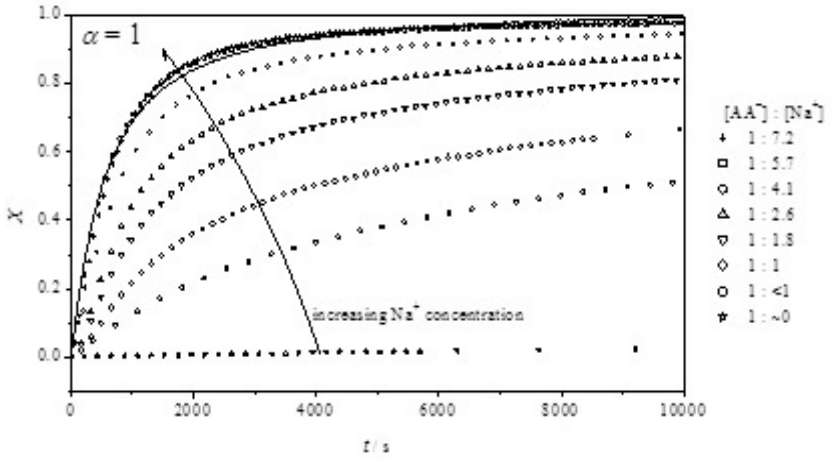
Projekty v rámci ktorých sa výsledok dosiahol: BASF SE kontraktová spolupráca, VEGA 2/0198/14

Bol publikovaný článok v rámci IUPAC konzorcia, ktorého výstupom je doporučenie analýzy kyseliny polyakrylovej a polymetakrylovej metódou gélovej permeačnej chromatografie. Ukončili sa práce venované mechanizmu polymerizácie akrylamidu a neionizovanej kyseliny akrylovej vo vodnej fáze. Porovnanie experimentálnych a modelovaných konverzných kriviek a distribúcií mólových hmotností so zahrnutím prenosových reakcií typických pre polymerizáciu akrylátových monomérov ukázalo dobrú zhodu. Tiež sa ukázala dôležitosť prítomnosti alkalických kovov na polymerizáciu kyseliny akrylovej v ionizovanej forme. Protiióny tienia náboj na rastových radikáloch a ich koncentrácia určuje rýchlosť polymerizácie ionizovanej kyseliny akrylovej. Miera vplyvu je daná typom protiiónov, pričom menšie protiióny poskytujú efektívnejšie tienenie záporného náboja rastových radikálov.

Výstupy:

1. DRAWE, P. - BUBACK, M. - LACÍK, Igor. Radical polymerization of alkali acrylates in aqueous solution. In *Macromolecular Chemistry and Physics*, 2015, vol. 216, p. 1333-1340. (2.616 - IF2014). ISSN 1022-1352. Typ: ADCA
2. LACÍK, Igor - *STACH, Marek* - *KASÁK, Peter* - SEMAK, V. - UHELSKÁ, Lucia - CHOVANCOVÁ, Anna - REINHOLD,G. - KILZ, P. - DELAITTRE, G. - CHARLEUX, B. - CHADUC, I. - D´AGOSTO, F. -LANSALOT, M. - GABORIEAU, M. - CASTIGNOLLES, P.e - GILBERT, R. G. - SZABLAN, Z. -BARNER-KOWOLLIK, Ch. - HESSE, P. - BUBACK, Ml. SEC analysis of poly(acrylic acid) andpoly(methacrylic acid). In *Macromolecular Chemistry and Physics*, 2015, vol. 216, p. 23-37. (2.616 - IF2014). ISSN1022-1352. Typ: ADCA
3. WITTENBERG, N. F. G. - PREUSSER, C. - KATTNER, H. - *STACH, Marek* - LACÍK, Igor, HUTCHINSON, R. A. - BUBACK M. Modelling acrylic acid radical polymerization in aqueous

solution. *Macromolecular Reaction Engineering,* **2015**, early view, DOI: 10.1002/mren.201500017.



Typ: ADCA

Vplyv prídavku Na^+ na rýchlosť polymerizácie akrylátu sodného (AA^-). Plná čiara zodpovedá polymerizácii neionizovanej kyseliny akrylovej.

2) Názov: **CASSETTE: Konjugovaný antisense systém pre selektívne a špecifické umlčanie *BCR - ABL*: Inovatívna stratégia pre liečbu CML.**
CASSETTE: *C*onjugated *A*ntisense system for *S*elective and *S*pecific *BCR-ABL* suppr*E*ssion: An innova*T*ive stra*T*egy for CML treatment.

Ústav polymérov SAV

Mená riešiteľov: F. Rázga, V. Némethová, D. Moravčíková, L. Kleščíková, R. Baran, I. Lacík

Projekty v rámci ktorých sa výsledok dosiahol: SASPRO 0057/01/02 a VEGA 2/0094/15

Nakoľko je projekt *CASSETTE* zameraný na selektívne a špecifické potlačenie expresie onkoproteínu BCR-ABL pomocou konjugovaného antisense systému a jeho realizácia začala v hodnotenom období *de facto* od nuly, príprava a syntéza pilotného systému sa dominantne opierala o *in silico* design a syntézu základných blokov, z ktorých výsledný systém pozostáva. Boli navrhnuté cieľové rozpoznávacie interakčné miesta a výsledná štrukturálna podoba pilotného systému. Zo syntetického hľadiska sme pripravili základné stavebné bloky, osvojili sme si čiastkové reakcie a úspešne sme zvládli spojenie do väčších štrukturálnych celkov. Takisto sa nám pomocou ATRP podarilo pripraviť polymérny komponent požadovanej mólovej hmotnosti. Všetky tieto dielčie výsledky konvergujú k zosyntetizovaniu prototypu, ktorý bude v následnom období validovaný pomocou metód molekulárnej biológie. V sumáre, projekt inovatívneho terapeutického riešenia pre CML sa podarilo uspokojivo rozbehnúť a aktivity smerujúce k dosiahnutiu projektových zámerov v rámci projektov VEGA 2/0094/15 a SASPRO 0057/01/02 sa vyvíjajú želaným smerom v súlade s naplánovaným časovým harmonogramom. Navyše, navrhovaný koncept bol podstúpený na posúdenie patentovému úradu v rámci patentovej prihlášky F. Rázga, V. Némethová: A method for altering the functional state of mRNA allowing its selective and specific recognition PP-50065-2015, ktorá predstavuje najvýznamnejší výstup projektu v hodnotiacom období. Boli pripravené tri publikácie, ktoré však neboli v hodnotiacom období odoslané do prislúchajúcich redakcií, nakoľko po dohode s právnou kanceláriou, ktorá predmetnú inováciu zastupuje v patentovom konaní, bolo dohodnuté ich účelové pozastavenie.

Výstupy:

1. RÁZGA, Filip – NÉMETHOVÁ, Veronika. A method for altering the functional state of mRNA allowingits selective and specific recognition. Patentová prihláška, PP-50065-2015

3) Názov: **Hydrofilizácia dreva a kompozitov na báze dreva.**
Hydrophilization of wood and wood-based composites.

Ústav polymérov SAV

Mená riešiteľov: I. Novák, M. Valentin, J. Prachár, M. Mičušík, A. Kleinová, I. Janigová

Projekty v rámci ktorých sa výsledok dosiahol: VEGA 02/0199/14, spolupráca s Drevárskou fakultou TU vo Zvolene

Pri skúmaní povrchových vlastností bukového dreva upraveného rádiofrekvenčnou (RF) plazmou (300 W, 120 sekúnd, tlak P = 100 Pa) sa zistilo na základe výsledkov AFM meraní, že povrchová drsnosť dreva po úprave mierne klesá. ATR-FTIR spektrá potvrdili rast polarity bukového dreva v priebehu modifikácie RF plazmou. Rast polarity dreva sa prejavil zvýšením koncentrácie – OH skupín na povrchu dreva. Obsah kyslíka a dusíka naviazaného na povrchu dreva počas modifikácie RF plazmou rástol a obsah uhlíka naopak klesal. Koncentrácia COOH, C–O and C=O skupín v priebehu modifikácie bukového dreva RF plazmou výrazne rástla. Polárna zložka povrchovej energie bukového dreva sa po modifikácii plazmou výrazne zvýšila o 60%. Po 28 dňoch starnutia sa zistil pokles povrchovej energie bukového dreva upraveného RF plazmou o 12%. Pevnosť adhézneho spoja bukového dreva modifikovaného RF plazmou s polyuretánovým adhezívom vzrástla o 50%.

Výstupy:

1. NOVÁK, Igor - *POPELKA, Anton* - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - OMASTOVÁ, Mária - VALENTIN, Marian - SEDLIAČIK, J. - JANIGOVÁ, Ivica - KLEINOVÁ, Angela - ŠLOUF, M. Investigation of beech wood modified by radio-frequency discharge plasma. In *Vacuum*, 2015, vol. 119, p. 88-94. (1.858 - IF2014). (2015 - Current Contents). ISSN 0042-207X. Typ: ADCA
2. NOVÁK, Igor - SEDLIAČIK, J. - ŽIGO, Ondrej - *VALENTIN, Marian* - PRACHÁR, Jozef - MATYAŠOVSKÝ, J. - JURKOVIČ, P. Oak wood modification using cold plasma. In Annals of Warsaw University of Life Sciences - SGGW : Forestry and Wood Technology. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 90, p. 134-137. ISSN 1898-5912. Typ: AEC
3. NOVÁK, Igor - CHODÁK, Ivan - SEDLIAČIK, J. - *POPELKA, Anton* - PRACHÁR, Jozef - MATYAŠOVSKÝ, J. - JURKOVIČ, P. Antibacterial modification of polymer veneers. In Annals Warsaw University of Life Sciences : Forestry and Wood Technology. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 92, p. 307-311. ISSN 1898-5912. Typ: AECA
4. NOVÁK, Igor - CHODÁK, Ivan - SEDLIAČIK, J. - PRACHÁR, Jozef - JURKOVIČ, P. - MATYAŠOVSKÝ, J. Pre-treatment of polyester-based veneers. In Annals Warsaw University of Life Sciences : Forestry and Wood Technology. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 92, p. 312-315. ISSN 1898-5912. Typ: AECA

2.3.3. Medzinárodné vedecké projekty

1) Názov**: Mikrokapsuly pre alogénnu transplantáciu enkapsulovaných ostrovčekov v predklinickom modeli nehumánnych primátov.**
Microcapsules for allogeneic islet transplantation in a comprehensive, preclinical non-human primate model.

Ústav polymérov SAV

Mená riešiteľov: I. Lacík, L. Uhelská, D. Treľová, F. Rázga, V. Némethová, Z. Kroneková, J. Kronek, A. Mihalová, P. Mazancová, L. Kleščíková, R. Baran, E. Hipká, Z. Cseriová

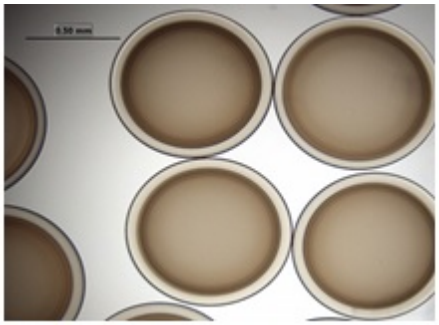
Projekty v rámci ktorých sa výsledok dosiahol: CDP projekt, JDRF project, project APVV-14-0858

Polymérne PMCG mikrokapsuly slúžiace ako imunitná ochrana pre enkapsulované pankreatické ostrovčeky prešli od začiatku JDRF projektu v novembri 2014 zásadnou zmenou týkajúcou sa protokolu prípravy. Doposiaľ používaný spôsob prípravy neposkytoval dostatočnú kvalitu

mikrokapsúl, ktorá je daná mierou homogenity, odolnosťou voči kompresii, (ne)prítomnosťou povrchových defektov. Z tohto dôvodu sa pristúpilo k modifikácii procesu, ktorá viedla k novému typu PMCG mikrokapsúl s výrazne lepšími vlastnosťami v porovnaní s tými, ktoré sa pripravili v minulosti. Základným predpokladom úspechu PMCG mikrokapsúl je schopnosť ich dlhodobo a opakovane pripravovať s reprodukovateľnými vlastnosťami. Tieto mikrokapsule sa aktuálne testujú v predklinickom modeli nehumánnych primátov (makaky) a v myšiach v spolupráci s univerzitou v Chicagu v rámci JDRF projektu. Významným prínosom je implementácia konfokálnej Ramanovej mikroskopie pre charakterizáciu mikrokapsúl v spolupráci s Fyzikálnym ústavom SAV.

Výstupy:

1. VEISEH, O. - DOLOFF, J. C. - MA, M. - VEGAS, A. J. - TAM, H. H. - BADER, A. R. - LI, J. - LANGAN, E. - WYCKOFF, J. - LOO, W. S. - JHUNJHUNWALA, S. - CHIU, A. - SIEBERT, S. - TANG, K. - HOLLISTER-LOCK, J. - ARESTA-DASILVA, S. - BOCHENEK, M. - MENDOZAELIAS, J. - WANG, Y. - QI, M. - LAVIN, D. M. - CHEN, M. - DHOLAKIA, N. - THAKRAR, R. - LACÍK, Igor - WEIR, G. C. - OBERHOLZER, J. - GREINER, D. L. - LANGER, R. - ANDERSON, D. G. Size- and shape-dependent foreign body immune response to materials implanted in rodents and non-human primates. In *Nature Materials*, 2015, vol. 14, p. 643-651. (36.503 - IF2014). ISSN 1476-1122. Typ: ADCA
2. NÉMETHOVÁ, Veronika - LACÍK, Igor - RÁZGA, Filip. Vibration technology for microencapsulation: The restrictive role of viscosity. In *Journal of Bioprocessing and Biotechniques :* an open access journal, 2015, vol. 5, iss. 1, art.no. 1000199. (2015 - Scopus). ISSN 2155-9821 Typ: ADEB



PMCG mikrokapsuly s vylepšenými vlastnosťami pripravené modifikovaným protokolom prípravy, určené pre testovanie v zvieracích modeloch

2) Názov: **Ťahové senzory na báze vodivých polymérnych nanokompozitov.**
Strain sensors on the base of conducting polymeric nanocomposites.

Ústav polymérov SAV

Mená riešiteľov: M. Omastová, K. Czaniková, M. Mičušík, J. Kuliček, J. Tabačiarová, I. Chodák

Projekty v rámci ktorých sa výsledok dosiahol: APVV SK-GR-0029-11 a VEGA 02/0149/14

Pripravili sa nanokompozity s polyvinylidenfluoridovou (PVDF) matricou plnenou mnohostennými uhlíkovými nanotrubičkami (MWCNT), ktoré sa použili na sledovanie zmeny elektrického odporu počas ťahovej deformácie. Séria vzoriek bola pripravená zamiešaním MWCNT o koncentrácii 0,5 hm.% až 8 hm.% do polymérnej taveniny, pričom bola získaná dobrá dispergácia nanoplniva v polymérnej matrici, ako to potvrdilo SEM štúdium pripravených nanokompozitov. Perkolačný prah sa dosiahol pri zamiešaní 1,2 hm.% MWCNT. Študoval sa vplyv obsahu nanoplniva na senzorické vlastnosti. Deformačné snímanie vodivých vzoriek bolo študované pomocou in-situ meraní elektrických vodivostí počas ťahového zaťaženia. Vlastnosti týchto nanokompozitov sa porovnávali s kompozitmi obsahujúcimi sadze. Výsledky ukázali, že elektricky vodivé PVDF/MWCNT nanokompozity môžu byť použité ako citlivé senzory na monitorovanie

deformačných zmien v nanokompozitoch.

Výstupy:

1. GEORGOUIS, G. - PANDIS, C. - KALAMIOTIS, A. - GEORGIOPOULOS, P. - KYRITSIS, A. - KONTOU, E. - PISSIS, P. - MIČUŠÍK, Matej - CZANIKOVÁ, Klaudia - KULIČEK, Jaroslav - OMASTOVÁ, Mária. Strain sensing in polymer/carbon nanotube composites by electrical resistance measurement. In *Composites Part B: Engineering*, 2015, vol. 68, p. 162-169. (2.983 - IF2014). ISSN 1359-8368. Typ: ADCA
2. GEORGOUSIS, G. - PANDIS, C. - CHATZIMANOLIS-MOUSTAKAS, C. - KYRITSIS, A. - KONTOU, E. - PISSIS, P. - *KRAJČI, Juraj* - CHODÁK, Ivan - TABAČIAROVÁ, Jana - MIČUŠÍK, Matej - OMASTOVÁ, Mária. Study of the reinforcing mechanism and strain sensing in a carbon black filled elastomer. In *Composites Part B: Engineering*, 2015, vol. 80, p. 20-26. (2.983 - IF2014). ISSN 1359-8368. Typ: ADCA
3. PISSIS, P. - GEORGOUSIS, G. - PANDIS, C. - GEORGIOPOULOS, P. - KYRITSIS, A. - KONTOU, E. - MIČUŠÍK, Matej - CZANIKOVÁ, Klaudia - OMASTOVÁ, Mária. Strain and damage sensing in polymer composites and nanocomposites with conducting fillers. In *Procedia Engineering*, 2015, vol. 114, p. 590-597. (2015 - SCOPUS). ISSN 1877-7058. Typ: ADMB

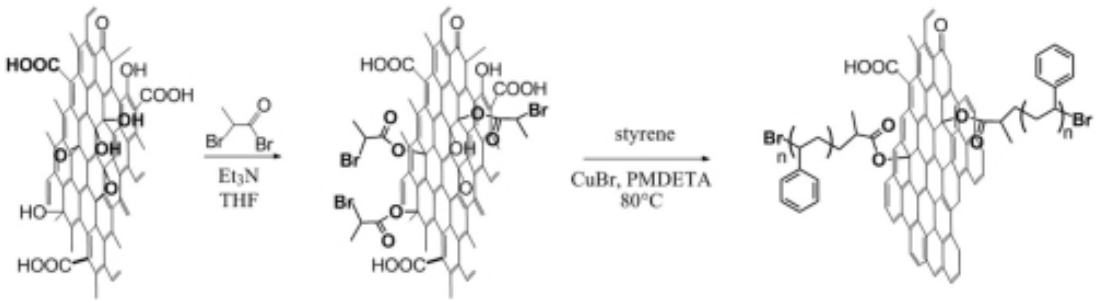
3) Názov: **Redukcia povrchu grefén oxidu grafenu počas radikálovej polymerizácie s prenosom atómu.**
Reduction of graphene oxide during atom transfer radical polymerization.

Ústav polymérov SAV

Mená riešiteľov: M. Ilčíková, M. Mrlík, Z. Špitalský, M. Mičušík, K. Csomorová, A. Kleinová, J. Mosnáček,

Projekty v rámci ktorých sa výsledok dosiahol: CE FUN-MAT

Elektricky vodivé hybridné materiály z grafén oxidu (GO) modifikovaného polystyrenovými reťazcami (GO-PS) sa pripravili redukciou GO *in situ* počas polymerizácie styrénu z povrchu GO použitím radikálovej polymerizácie s prenosom atómu (ATRP). V porovnaní s GO, elektrická vodivost GO-PS hybridu vzrástla až o 8 rádov, v závislosti na dobe polymerizácie. Redukcia bola spôsobená *N*,*N*,*N*‘,*N*‘,*N*‘‘-pentametyldietyléntriamínom (PMDETA), ktorý sa pri ATRP používa ako ligand komlexujúci katalyzátor. Zistilo sa, že PMDETA sa zúčastňuje oboch procesov, t.j. redukcie GO a katalýzy polymerizácie, ktorá z tohto dôvodu môže prebiehať až od určitého pomeru PMDETA/GO. Tento poznatok sa využil pre prípravu elektroreologickej suspenzie na báze GO poly(glycidyl metakrylátom). Vhodným nastavením pomeru GO a PMDETA sa v jednom reakčnom kroku pripravil materiál ľahko dispergovateľný v nosnom médiu a zároveň s vhodnou elektrickou vodivosťou pre aplikáciu v elektroreologických suspenziách.



Modifikácia GO iniciátorom ATRP a následná simultánna redukcia povrchu GO a modifikácia GO povrchu reťazcami polystyrénu.

Výstupy:

1. ILČÍKOVÁ, Markéta - MRLÍK, M. - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - CSOMOROVÁ,

Katarína - SASINKOVÁ, V. - KLEINOVÁ, Angela - MOSNÁČEK, Jaroslav. A tertiary amine in two competitive processes: Reduction of graphene oxide vs. catalysis of atom transfer radical polymerization. In *RSC Advances*, 2015, vol. 5, p. 3370-3376. (3.840 - IF2014). ISSN 2046-2069.Typ: ADCA

2. MRLÍK, M . – ILČÍKOVÁ, Markéta – PLACHÝ, T. – PAVLÍNEK, V. – ŠPITALSKÝ, Zdenko – MOSNÁČEK, Jaroslav. Graphene oxide reduction during surface-initiated atom transfer radical polymerization of glycidyl methacrylate: Controlling electro-responsive properties. In *Chemical Engineering Journal*, 2016, vol. 283, pp. 717-720. (4.321 - IF2014). ISSN 1385-8947. Typ: ADCA

2.4. Publikačná činnosť (úplný zoznam je uvedený v Prílohe C)

Tabuľka 2e Štatistika vybraných kategórií publikácií

PUBLIKAČNÁ A EDIČNÁ ČINNOSŤ	A Počet v r. 2015/ doplnky z r. 2014	B Počet v r. 2015/ doplnky z r. 2014	C Počet v r. 2015/ doplnky z r. 2014
1. Vedecké monografie vydané v domácich vydavateľstvách (AAB, ABB)	**0 / 0**	**0 / 0**	**0 / 0**
2. Vedecké monografie vydané v zahraničných vydavateľstvách (AAA, ABA)	**1 / 0**	**0 / 0**	**0 / 0**
3. Odborné monografie, vysokoškolské učebnice a učebné texty vydané v domácich vydavateľstvách (BAB, ACB, CAB)	**0 / 0**	**0 / 0**	**0 / 0**
4. Odborné monografie a vysokoškolské učebnice a učebné texty vydané v zahraničných vydavateľstvách (BAA, ACA, CAA)	**0 / 0**	**0 / 0**	**0 / 0**
5. Kapitoly vo vedeckých monografiách vydaných v domácich vydavateľstvách (ABD)	**0 / 0**	**0 / 0**	**0 / 0**
6. Kapitoly vo vedeckých monografiách vydaných v zahraničných vydavateľstvách (ABC)	**2 / 1**	**0 / 0**	**0 / 0**
7. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v domácich vydavateľstvách (BBB, ACD)	**0 / 0**	**0 / 0**	**0 / 0**
8. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v zahraničných vydavateľstvách (BBA, ACC)	**0 / 0**	**0 / 0**	**0 / 0**
9. Vedecké a odborné práce evidované v CCC a vedecké práce evidované vo WOS Core Collection a Scopus (ADCA, ADCB, ADDA, ADDB, ADMA, ADMB, ADNA, ADNB, CDCA, CDCB, CDDA, CDDB, BDCA, BDCB, BDDA, BDDB)	**71 / 2**	**0 / 0**	**0 / 0**
10. Vedecké a odborné práce v časopisoch neevidovaných v CCC, WoS Core Collection, SCOPUS (ADEA, ADEB, ADFA, ADFB, CDEA, CDEB, CDFA, CDFB, BDE, BDEA, BDEB, BDF, BDFA, BDFB)	**7 / 0**	**0 / 0**	**0 / 0**
11. Vedecké a odborné práce v zborníkoch			
a/ recenzované práce a publikované pozvané príspevky (AECA, AECB, AEDA, AEDB, AFA, AFB, BEC, BED)	**6 / 0**	**0 / 0**	**1 / 1**
b/ nerecenzované práce (BEE, BEF, CEC, CED)	**0 / 0**	**0 / 0**	**0 / 0**
12. Vydané periodiká evidované v CCC, WoS Core Collection, SCOPUS	**0**	**0**	**0**
13. Ostatné vydané periodiká	**0**	**0**	**0**
14. Vydané alebo editované zborníky z vedeckých podujatí (FAI)	**0 / 0**	**0 / 0**	**0 / 0**
15. Práce uverejnené na internete (GHG)	**0 / 0**	**0 / 0**	**0 / 0**
16. Preklady vedeckých a odborných textov (EAJ)	**0 / 0**	**0 / 0**	**0 / 0**
17. Heslá v *Encyklopédii Beliana* a iných encyklopédiách a terminologických slovníkoch (BDA, BDB)	**0 / 0**	**0 / 0**	**0 / 0**

A - pracovisko SAV je uvedené ako pracovisko (adresa) autora, alebo je súčasťou kolaborácie alebo iného združenia, ktoré je uvedené ako pracovisko (adresa) autora
B - pracovisko SAV nie je na publikácii uvedené, pretože prameň údaj o pracovisku autora neobsahuje, práca ale vznikla na pracovisku SAV
C - pracovisko SAV je uvedené ako materské pracovisko autora odlišné od pracoviska, na ktorom práca vznikla (napr. „on leave...“, „permanent address...“, „present address...“)

Tabuľka 2f Ohlasy

OHLASY	**A** **Počet v r. 2014/ doplnky z r. 2013**	**B** **Počet v r. 2014/ doplnky z r. 2013**
Citácie vo WoS Core Collection (1.1, 2.1)	1580 / 0	1 / 0
Citácie v SCOPUS (1.2, 2.2)	218 / 1	0 / 0
Citácie v iných citačných indexoch a databázach (9, 10, 3.2, 4.2)	0 / 0	0 / 0
Citácie v publikáciách neregistrovaných v citačných indexoch (3, 4, 3.1, 4.1)	7 / 0	0 / 0
Recenzie na práce autorov z organizácie (5, 6, 7, 8)	0 / 0	0 / 0

A - pracovisko SAV je uvedené ako pracovisko (adresa) autora, alebo je súčasťou kolaborácie alebo iného združenia, ktoré je uvedené ako pracovisko (adresa) autora, alebo pracovisko SAV nie je na publikácii uvedené, pretože prameň údaj o pracovisku autora neobsahuje, práca ale vznikla na pracovisku SAV
B - pracovisko SAV je uvedené ako materské pracovisko autora odlišné od pracoviska, na ktorom práca vznikla (napr. „on leave...“, „permanent address...“, „present address...“)

2.5. Aktívna účasť na vedeckých podujatiach

Tabuľka 2g Vedecké podujatia

Prednášky a vývesky na medzinárodných vedeckých podujatiach	**131**
Prednášky a vývesky na domácich vedeckých podujatiach	**33**

2.6. Vyžiadané prednášky

2.6.1. Vyžiadané prednášky na medzinárodných vedeckých podujatiach

1. KRONEK, Juraj – ZAHORANOVÁ, Anna – *MIKULEC, Marcel* – KRONEKOVÁ, Zuzana. Hydrogels based on poly(2-oxazoline)s, 3rd CEEPN Workshop, 23. – 26. 09. 2015, Iasi, Rumunsko, p. 5-6
2. LACÍK, Igor. Microcapsules for immunoprotection of transplanted islets of Langerhans. 79th Prague Meeting on Macromolecules; Functional polymers at bio-material interfaces 2015, 28 June – 02 July, Prague, Czech Republic, Book of Abstracts, p. 30
3. LACÍK Igor. Kinetics and mechanism of radical polymerization in aqueous solutions" SEC characterization for polyacrylic acid, polyacrylamide and their copolymers. Danube Vltava Sava Polymer Meeting 2015, Gmunden, Austria, 11-13.5.2015, In *Danube Vltava Sava Polymer Meeting : DVSPM 2015 : proceedings of a conference on polymer science*. - Linz, Austria : Trauner Verlag Univesitat, 2015, p. 6. ISBN 978-3-99033-491-1.
4. MATYAŠOVSKÝ, J. - SEDLIAČIK, J. - NOVÁK, Igor - JURKOVIČ, P. - DUCHOVIČ, P. Lowering of formaldehyde emission from modified UF resin with colagen polymers. XXIXth International Scientific Conference "Wood – Material of the XXIst Century", November 16 – 19, 2015, Rogow, Poland. In *Annals Warsaw University of Life Sciences : Forestry and Wood Technology*. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 92, p. 284-288. ISSN 1898-5912.
5. NOVÁK, Igor - SEDLIAČIK, J. - ŽIGO, Ondrej - *VALENTIN, Marian* - PRACHÁR, Jozef - MATYAŠOVSKÝ, J. - JURKOVIČ, P. Oak wood modification using cold plasma. XXIXth International Scientific Conference "Wood – Material of the XXIst Century", November 16 – 19, 2015,

Rogow, Poland. In *Annals of Warsaw University of Life Sciences - SGGW : Forestry and Wood Technology*. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 90, p. 134-137. ISSN 1898-5912.

6. NOVÁK, Igor - SEDLIAČIK, J. - *VALENTIN, Marian* - ŽIGO, Ondrej - PRACHÁR, Jozef - JURKOVIČ, Peter - MATYAŠOVSKÝ, Ján. Antibacterial modification of polyolefin veneers. XXIXth International Scientific Conference "Wood – Material of the XXIst Century", November 16 – 19, 2015, Rogow, Poland. In *Annals of Warsaw University of Life Sciences - SGGW : Forestry and Wood Technology*. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 90, p. 138-142. ISSN 1898-5912.
7. NOVÁK, Igor - CHODÁK, Ivan - SEDLIAČIK, J. - *POPELKA, Anton* - PRACHÁR, Jozef - MATYAŠOVSKÝ, J. - JURKOVIČ, P. Antibacterial modification of polymer veneers. XXIXth International Scientific Conference "Wood – Material of the XXIst Century", November 16 – 19, 2015, Rogow, Poland. In *Annals Warsaw University of Life Sciences : Forestry and Wood Technology*. - Warsaw, Poland: Warsaw University of Life Sciences Press, 2015, no. 92, p. 307-311. ISSN 1898-5912.
8. NOVÁK, Igor - CHODÁK, Ivan - SEDLIAČIK, J. - PRACHÁR, Jozef - JURKOVIČ, P. - MATYAŠOVSKÝ, J. Pre-treatment of polyester-based veneers. XXIXth International Scientific Conference "Wood – Material of the XXIst Century", November 16 – 19, 2015, Rogow, Poland. In *Annals Warsaw University of Life Sciences : Forestry and Wood Technology*. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 92, p. 312-315. ISSN 1898-5912.

2.6.2. Vyžiadané prednášky na domácich vedeckých podujatiach

2.6.3. Vyžiadané prednášky na významných vedeckých inštitúciách

1. BENKOVÁ, Zuzana – NÁMER, Pavol – CIFRA, Peter. From stripe to slab confinement for DNA linearization in nanochannels. 29.05.2015, Katedra experimentálnej fyziky, FMFI UK, Bratislava.
2. BENKOVÁ, Zuzana. Úvod do metód počítačovej chémie. 10.06.2015, Ústav polymérov SAV, Bratislava
3. LACÍK, I. 150 years of BASF innovations. Oslava 150. výročia založenia BASF pre strednú a východnú Európu. 28.5.2015, Brno, Česká republika.
4. LUKEŠOVÁ,Miroslava - ŠVAJDLENKOVÁ, Helena - SIPPEL, P. - REUTER, D. – MACOVÁ, Eva - BEREK, Dušan - ZALESKI, M. - EDELMANN, M. - LOIDL, A.- BARTOŠ, Josef. Structure and Dynamics in bulk and confined systems. EP V CEKM, , November 05, 2015, Universität Augsburg, Germany. Prednáška (Lukešová)
5. MOSNÁČEK, Jaroslav. Atom transfer radical polymerization (ATRP): Development of photoATRP and hybrid materials prepared by ATRP. National Chung Cheng University, Chia-Yi a National Chung Hsing University, Taichung, November 2015, Taiwan. Dve prednášky (Mosnáček)
6. NÉMETHOVÁ, Veronika –LACÍK, Igor - RÁZGA, Filip. Polymérmi proti rakovine. 18.02.2015, KHaT Nemocnica Antolská, Bratislava
7. NOVÁK, Igor. Povrchové a adhézne vlastnosti polymérov a polymérnych adhezív. 18.05.2015 Prednáška v rámci bilaterálnej spolupráce ÚPo SAV a Ústavom polymérov, Fakulta technologická VŠCHT, Praha, ČR pre pracovníkov Ústavu polymérov, Fakulta technologická VŠCHT, Praha, ČR.
8. OMASTOVÁ, Mária - ŠPITÁLSKY, Zdenko. Polymérne kompozity s uhlíkovými nanočasticami a ich aplikácie. 20.02.2015, Elektrotechnický ústav SAV, prednáška v rámci seminárov

9. ŠPITÁLSKY, Zdenko. Organic materials and nanocomposites. Conference: 2nd Symposium on Innovation, Cooperation in Technology and International Transfer of Technology China + 16 CEEC Format, At Bratislava, Slovakia, volume: 2, prednáška.

2.7. Patentová a licenčná činnosť na Slovensku a v zahraničí v roku 2015

2.7.1. Vynálezy, na ktoré bol udelený patent

Na Slovensku - počet patentov: 2

Číslo PV: 5830163 (Japan Patent Office)
Mená autorov: CHODÁK, Ivan - ALEXY, P - BAKOŠ, D. - BUGAJ, P. - PAVLAČKOVÁ, M. - TOMANOVÁ, K. - BENOVIČ, F. - -LAVEC, R. - MIHALÍK, M. – BOTOŠOVÁ, M
Názov vynálezu: Biologically degradable polymeric composition with high deformability
Majiteľ / spolumajiteľ: Ústav polymérov SAV

Číslo PV: WO-2014-209241
Mená autorov: LUKÁČ, Ivan – *HUSÁR, Branislav – KÓSA, Csaba – FÁRYOVÁ, Janka*
Názov vynálezu: Method for cross-linking of polymer films.
Majiteľ / spolumajiteľ: Ústav polymérov SAV

2.7.2. Prihlásené vynálezy

Na Slovensku - počet patentov: 5

Číslo PV: PP 50017-2014
Mená autorov: BEREK, Dušan – *NOVÁK, Ivan* – MUNKA, K. - KARACSONYOVÁ, M.
Názov vynálezu: Spôsob prípravy kompozitného sorbenta na odstraňovanie kontaminantov z vôd
Majiteľ / spolumajiteľ: Ústav polymérov SAV

Číslo PV: PP 97-2015
Mená autorov: CHODÁK, Ivan - JOCHEC MOŠKOVÁ, Daniela - SEDNIČKOVÁ, Michaela – KOMADEL, P. – JANKOVIČ, Ľ.
Názov vynálezu: Gumárenská zmes na báze polymérnej kompozície s obsahom nanoplniva.
Majiteľ / spolumajiteľ: Ústav polymérov SAV

Číslo PV: D2_8-0-1-2014 - PP in India
Mená autorov: BEREK, Dušan - MEHTA, R. - PANKIL, S. - UPPDHYAY, N. S. (Thapar University, Punjab, India)
Názov vynálezu: Polylactic acid and process for preparation there of
Majiteľ / spolumajiteľ: Ústav polymérov SAV

Číslo PV: PCT/SK2015/050003 – medzinárodná prihláška
Mená autorov: BEREK, Dušan – *NOVÁK, Ivan* - MUNKA, K. - VARGA, S. - KARÁCSONYOVÁ, M.
Názov vynálezu: Method for preparing composite sorbent for removing contaminants from water
Majiteľ / spolumajiteľ: Ústav polymérov SAV

Číslo PV: PP-50065-2015
Mená autorov: RÁZGA, Filip – NÉMETHOVÁ, Veronika
Názov vynálezu: A method for altering the functional status of mRNA allowing its selective and specific recognition;
Majiteľ / spolumajiteľ: Ústav polymérov SAV

2.7.3. Predané licencie

2.7.4. Realizované patenty

2.8. Účasť expertov na hodnotení národných projektov (APVV, VEGA a iných)

Tabuľka 2h Experti hodnotiaci národné projekty

Meno pracovníka	Typ programu/projektu/výzvy	Počet hodnotených projektov
Chodák Ivan	VEGA	1
Novák Igor	APVV	1
Novák Igor	VEGA	1
Omastová Mária	APVV	2
Rychlý Jozef	VEGA	1
Špitálsky Zdenko	VEGA	1

2.9. Účasť na spracovaní hesiel do encyklopédie Beliana

Počet autorov hesiel: 0

2.10. Iné informácie k vedeckej činnosti.

Hodnotenie organizačných útvarov ústavu Vedeckou radou sa už po piatykrát uskutočnilo formou dvojdňového kolokvia, ktoré sa konalo v polovici decembra 2015 v zasadačke Ústavu polymérov. V priebehu tohto kolokvia malo každé zo štyroch oddelení priestor na prezentáciu vedeckej, vedecko-organizačnej, popularizačnej a inej činnosti uskutočnenej v priebehu roku 2014. Kolokvium bolo organizované a vedené Vedeckou radou ústavu a pre každé oddelenie boli určení dvaja vnútroústavní hodnotitelia, pričom jedným z nich pre každé oddelenie bol mladý vedecký pracovník. Podkladom pre hodnotenie oddelení bol písomný materiál štrukturovaný podľa zásad definovaných Vedeckou radou. Cieľom hodnotenia bolo získať komplexný prehľad jednak o činnosti jednotlivých oddelení a zároveň o príspevku vedeckých a vedeckotechnických pracovníkov do výstupov oddelení v kontexte posledných troch rokov. Pri vyhodnotení kolokvia sa dospelo k názoru, že hodnotenie je postavené najmä na štatistických údajoch a nie úplne spĺňa účel prezentovania kvalitného výskumu jednotlivých oddelení. Diskutovalo sa o možnosti vytvorenia kolokvia na nových základoch, tak aby sa stalo lákavejším pre pracovníkov ústavu.
Zameranie ústavu pokračuje v tradičných témach popri rozvíjaní nových tém hlavne v oblasti bioaplikácií polymérov a nanotechnológiách. Tematický profil pracoviska je v štyroch základných oblastiach reflektujúcich tematiku štyroch oddelení: syntéza a modifikácia polymérov, biomateriály a bioaplikácie, polymérne kompozity a modelovanie. Kvantitatívne a kvalitatívne vedecké, projektové a popularizačné výstupy − počty publikácií, citácií, projektov a projektových spoluprác, popularizačných článkov, popularizačných akcií a vystúpení v médiách, ako aj iné ukazovateľe sú celkovo uspokojivé. Doleuvedená Tabuľka dokumentuje vývoj počtu publikácií a citácií za posledných 5 rokov. V budúcnosti by sa mali formovať ďalšie vedúce osobnosti tímov z mladšej generácie vedeckých pracovníkov, ktorí by mali postupne významnejšie prispievať k počtu publikácií a zastúpiť odchádzajúcu silnú generáciu starších vedeckých pracovníkov.

Rok	CC publikácie	Monografie/Kapitoly v knihách	Citácie WOS, Scopus
2011	44	0/4	1015
2012	62	0/2	1307
2013	48	0/2	1296
2014	65	0/2	1664
2015	66	1/3	1816

Vedecká rada organizuje semináre vedeckých pracovníkov ústavu a pravidlom sú i vedecké prednášky zahraničných hostí organizované ad-hoc v priebehu ich návštev ústavu prevažne v rámci projektovej spolupráce. Inicioval sa cyklus pravidelných pozvaných prednášok zahraničných vedeckých osobností; v aktívnejšej organizácii tohto cyklu sa bude pokračovať v r. 2016.

V roku 2015 sa po tretíkrát uskutočnilo hodnotenie mladých vedeckých pracovníkov, ktorým končila v roku 2015 pracovná zmluva. Základom pre hodnotenie bol vyplnený formulár s doterajšími výstupmi a vedecko-organizačnými aktivitami a krátka prezentácia doterajších najvýznamnejších výsledkov a plánovaného budúceho zamerania. Cieľom hodnotenia je selekcia mladých vedeckých pracovníkov na základe ich vedeckých výsledkov a schopností samostatne pracovať a rozvíjať výskum. Malo by viesť k zamestnávaniu kvalitnejších vedeckých pracovníkov, ktorí budú schopní rozvíjať výskum na ÚPo SAV a zvyšovať jeho konkurencieschopnosť a povedomie doma i v zahraničí.

3. Doktorandské štúdium, iná pedagogická činnosť a budovanie ľudských zdrojov pre vedu a techniku

3.1. Údaje o doktorandskom štúdiu

Tabuľka 3a Počet doktorandov v roku 2015

Forma	Počet k 31.12.2015				Počet ukončených doktorantúr v r. 2015					
	Doktorandi				Ukončenie z dôvodov					
	celkový počet		z toho novoprijatí		ukončenie úspešnou obhajobou		predčasné ukončenie		neúspešné ukončenie	
	M	Ž	M	Ž	M	Ž	M	Ž	M	Ž
Interná zo zdrojov SAV	5	7	1	2	1	2	0	2	1	0
Interná z iných zdrojov	0	0	0	0	0	0	0	0	0	0
Externá	0	1	0	0	1	0	0	0	0	0
Spolu	5	8	1	2	2	2	0	2	1	0
Súhrn	13		3		4		2		1	

3.2. Zmena formy doktorandského štúdia

Tabuľka 3b Počty preradení

Z formy	Interná z prostriedkov SAV	Interná z prostriedkov SAV	Interná z iných zdrojov	Interná z iných zdrojov	Externá	Externá
Do formy	**Interná z iných zdrojov**	**Externá**	**Interná z prostriedkov SAV**	**Externá**	**Interná z prostriedkov SAV**	**Interná z iných zdrojov**
Počet	0	0	0	0	0	0

3.3. Zoznam doktorandov, ktorí ukončili doktorandské štúdium úspešnou obhajobou

Tabuľka 3c Menný zoznam ukončených doktorandov v roku 2015 úspešnou obhajobou

Meno doktoranda	Forma DŠ	Mesiac, rok nástupu na DŠ	Mesiac, rok obhajoby	Číslo a názov študijného odboru	Meno a organizácia školiteľa	Fakulta udeľujúca vedeckú hodnosť
Ing. Michal Lacko	externé štúdium	09/2011	08/2015	5.2.21 technológia makromolekulových látok	Ing. Igor Novák PhD., Ústav polymérov SAV	Fakulta chemickej a potravinárskej technológie STU
Ing. Miroslava Lukešová	interné štúdium hradené z prostriedkov SAV	09/2011	08/2015	4.1.18 fyzikálna chémia	Ing. Josef Bartoš DrSc., Ústav polymérov SAV	Fakulta chemickej a potravinárskej technológie STU

Mgr. Marcel Mikulec	interné štúdium hradené z prostriedkov SAV	09/2010	08/2015	4.1.19 makromolekulová chémia	Mgr. Juraj Kronek PhD., Ústav polymérov SAV	Fakulta chemickej a potravinárskej technológie STU
Ing. Jana Tabačiarová	interné štúdium hradené z prostriedkov SAV	09/2011	08/2015	4.1.19 makromolekulová chémia	Ing. Mária Omastová DrSc., Ústav polymérov SAV	Fakulta chemickej a potravinárskej technológie STU

Zoznam interných a externých doktorandov je uvedený v Prílohe A.

3.4. Zoznam akreditovaných študijných programov s uvedením VŠ

Tabuľka 3d Zoznam akreditovaných študijných programov s uvedením univerzity/vysokej školy a fakulty

Názov študijného programu (ŠP)	**Názov študijného odboru (ŠO)**	**Číslo ŠO**	**Univerzita/vysoká škola a fakulta**
Fyzikálna chémia	fyzikálna chémia	4.1.18	Fakulta chemickej a potravinárskej technológie STU, Prírodovedecká fakulta UK
Makromolekulová chémia	makromolekulová chémia	4.1.19	Fakulta chemickej a potravinárskej technológie STU
Technológia polzmérnzch materiálov	technológia makromolekulových látok	5.2.21	Fa kulta chemickej a potravinárskej technológie STU

Tabuľka 3e Účasť na pedagogickom procese

Menný prehľad pracovníkov, ktorí boli menovaní do odborových komisií študijných programov doktorandského štúdia	**Menný prehľad pracovníkov, ktorí pôsobili ako členovia vedeckých rád univerzít, správnych rád univerzít a fakúlt**	**Menný prehľad pracovníkov, ktorí získali vyššiu vedeckú, pedagogickú hodnosť alebo vyšší kvalifikačný stupeň**
doc. Ing. Dušan Berek, DrSc. (analytická chémia)	prof., RNDr. Ignác Capek, DrSc. (Fakulta priemyselných technológií TnUAD v Púchove)	Ing. Miroslava Lukešová, PhD. (PhD., Fakulta chemickej a potravinárskej technológie STU)
Prof. Ing. Tomáš Bleha, DrSc. (fyzikálna chémia)	Ing. Igor Lacík, DrSc. (Fakulta chemickej a potravinárskej technológie STU)	Mgr. Marcel Mikulec (PhD., Fakulta chemickej a potravinárskej technológie STU)
Prof., RNDr. Ignác Capek, DrSc. (technológia makromolekulových látok)	Ing. Igor Lacík, DrSc. (Univerzita T. Bati, Zlín, Česká Republika)	Ing. Jana Tabačiarová (PhD., Fakulta chemickej a potravinárskej technológie STU)
RNDr. Peter Cifra, DrSc. (makromolekulová chémia)	Ing. Mária Omastová, DrSc. (Fakulta prírodných vied UCM)	

Mgr. Martin Danko, PhD. (technológia makromolekulových látok)		
Štefan Chmela, DrSc. (makromolekulová chémia)		
Prof. Ing. Ivan Chodák, DrSc. (technológia makromolekulových látok)		
Ing. Ivica Janigová, PhD. (technológia makromolekulových látok)		
Ing. Igor Lacík, DrSc. (makromolekulová chémia)		
Mgr. Jaroslav Mosnáček, PhD. (technológia makromolekulových látok)		
Ing. Igor Novák, PhD. (odbor v zahraničí)		
Ing. Mária Omastová, DrSc. (makromolekulová chémia)		
Ing. Lýdia Rychlá, DrSc. (fyzikálna chémia)		
Ing. Jozef Rychlý, DrSc. (makromolekulová chémia)		

3.5. Údaje o pedagogickej činnosti

Tabuľka 3f Prednášky a cvičenia vedené v roku 2015

PEDAGOGICKÁ ČINNOSŤ	Prednášky		Cvičenia a semináre	
	doma	v zahraničí	doma	v zahraničí
Počet prednášateľov alebo vedúcich cvičení	**7**	**1**	**3**	**0**
Celkový počet hodín v r. 2015	**60**	**30**	**412**	**0**

Tabuľka 3g Aktivity pracovníkov na VŠ

1.	**Počet pracovníkov, ktorí pôsobili ako vedúci alebo konzultanti diplomových a bakalárskych prác**	**6**
2.	**Počet vedených alebo konzultovaných diplomových a bakalárskych prác**	**8**
3.	**Počet pracovníkov, ktorí pôsobili ako školitelia doktorandov (PhD.)**	**11**
4.	**Počet školených doktorandov (aj pre iné inštitúcie)**	**16**
5.	**Počet oponovaných dizertačných a habilitačných prác**	**7**
6.	**Počet pracovníkov, ktorí oponovali dizertačné a habilitačné práce**	**4**
7.	**Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby DrSc. prác**	**2**
8.	**Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby PhD. prác**	**12**
9.	**Počet pracovníkov, ktorí pôsobili ako členovia komisií, resp. oponenti v inauguračnom alebo habilitačnom konaní na vysokých školách**	**3**

3.6. Iné dôležité informácie k pedagogickej činnosti

Vedeckí pracovníci Ústavu polymérov sa aktívne podieľajú aj na výchove študentov a doktorandov. V roku 2015 pracovníci ústavu pôsobili pedagogicky ako prednášatelia semestrálnych prednášok a seminárov pre študentov na Prírodovedeckej fakulte UK, Fakulte chemickej a potravinárskej technológie STU v Bratislave, Materiálovotechnickej fakulte STU so sídlom v Trnave a na Fakulte priemyselnych technologií TnU AD v Púchove.
Do riešenia parciálnych vedeckých problémov sa v pozícii VPS zapojili aj študenti bakalárskeho stupňa, čo je dobrým predpokladom pre ich následné získanie na PhD štúdium. Vedecká výchova doktorandov pokračovala úspešne aj v poslednom roku. Pracovisko bolo i v roku 2015 akreditované v troch odboroch pri Fakulte chemickej a potravinárskej technológie STU v Bratislave: Makromolekulová chémia, Technológia makromolekulových látok a Fyzikálna chémia, a pri Prírodovedeckej fakulte UK v Bratislave v odbore Fyzikálna chémia V roku 2015 sme získali troch nových doktorandov zo slovenských univerzít. Nepodarilo sa nám zatiaľ získať doktorandov z iných krajín EU, pre ktorých platia rovnaké podmienky pri nástupe ako u domácich doktorandov.
Vedeckí pracovníci ústavu prispievajú k výchove doktorandov aj ako prednášatelia v prednáškových kurzoch a ako vedúci dizertačných prác doktorandov. V rámci Vedeckej rady ÚPo SAV pokračovali diskusie o skvalitnení prípravy doktorandov, kde sa predpokladá zorganizovanie ďalších odborných prednášok a prehĺbenie vedomostí zapojením pracovníkov ústavu a pozvaných hostí ako prednášateľov do špeciálnych kurzov pre doktorandov. Vedenie ústavu a Vedecká rada kladú veľký dôraz na kvalitnú prípravu PhD študentov, ktorej súčasťou sú každoročné hodnotenia doktorandov, ktoré sa v roku 2015 konali čiastočne v septembri a čiastočne v novembri, pričom doktorandi prezentovali výsledky dosiahnuté v priebehu ukončeného akademického roka 2014/2015. Motiváciou v tomto štádiu prípravy je vyhodnotenie najlepších doktorandov za posledný akademický rok, ktorí získajú pravidelnú mesačnú finančnú prémiu k štipendiu. Doktorandské štúdium obhajobou dizertačných prác ukončili traja doktorandi.

V roku 2015 sme opätovne zorganizovali pre širokú verejnosť a pre študentov stredných a vysokých škôl Deň otvorených dverí, ktorý, ako každý rok, sa stretol s veľkým záujmom. Počas tohto podujatia bola zriadená Polymérna čajovňa, v ktorej stredoškoláci a vysokoškoláci diskutovali s kolegami z nášho ústavu Ing. Danielou Moravčíkovou, PhD., Ing. Igorom Novákom, PhD., Ing. Klaudiou Czanikovou, PhD. a Mgr. Jozefom Kollárom, PhD. o rôznych témach týkajúcich sa polymérov. Okrem Polymérnej čajovne mali návštevníci možnosť zistiť viac o polyméroch i pracovisku pri návštevách oddelení ústavu a malých prezentáciách vo vstupnej hale.

4. Medzinárodná vedecká spolupráca

4.1. Medzinárodné vedecké podujatia

4.1.1. Medzinárodné vedecké podujatia, ktoré organizácia SAV organizovala v roku 2015 alebo sa na ich organizácii podieľala, s vyhodnotením vedeckého a spoločenského prínosu podujatia

EUPOC 2015 - Vodivé polyméry, Gargano, Lago di Garda, Taliansko, 75 účastníkov, 24.05.-28.05.2015

Od roku 1998 Európska polymérna federácia (EPF) usporadúva každoročne sériu Europolymer konferencií (EUPOC), ktoré reflektujú aktuálne vedecké témy. Tradičným miestom konania je mestečko Gargnano pri jazere Lago di Garda, kde vo ville Palazzo Feltrinelli patriacej Univerzite v Miláne medzinárodná komunita nájde príjemné prostredie na výmenu vedeckých poznatkov. Vedecký program sa skladá z pozvaných prednášok, prenášok a prezentácie posterov. V tomto roku bola konferencia venovaná tématike vodivých polymérnych materiálov. Hlavnými organizátormi EUPOC 2015 boli Ing. Mária Omastová, DrSc. z Ústavu polymérov SAV, zastupujúca zároveň aj Slovenskú chemickú spoločnosť a prof. Soren Hvilsted z Technical University of Denmark v Lyngby, ktorý je zároveň aj zástupcom Dánskej spoločnosti pre polymérnu technológiu. Konferencia sa konala od 24.5. do 28.5.2015.

Cieľom konferencie bolo poskytnúť najmä mladým vedeckým pracovníkom a doktorandom prehľad o najnovších trendoch v oblasti vodivých polymérnych materiálov a ich aplikáciach. Tento cieľ sa podarilo dosiahnuť prostredníctvom prezentácií pozvaných popredných vedeckých odborníkov a diskusií nielen počas postrovej sekcie.

Vodivosť polymérnych materiálov je spôsobená pohybom elektricky nabitých častíc, iónov, protónov a elektrónov. Polyméry, v ktorých sú elektróny časticami, podieľajúcimi sa na prenose náboja, sú tzv. vnútorne (intrinsically) vodivé. V takýchto polyméroch je elektrická vodivosť výsledkom prítomných delokalizovaných elektrónov pozdĺž reťazca polyméru, najznámejšími sú polyanilín, polypyrol, tiofén, a poly(3,4-etyléndioxytiofén): polystyrén sulfonát (PEDOT:PSS). O význame týchto materiálov svedčí aj udelenie Nobelovej ceny za chémiu v roku 2000, kedy Alan Heeger, Alan MacDiarmid, a Hideki Shirakawa získali toto ocenenie "za objav a vývoj vodivých polymérov". Protónová vodivosť polymérov je vo veľkej miere využívaná v palivových článkoch. Systémy palivových článkov sú v súčasnej dobe komerčne dostupné a využívané, napr. v alternatívnych zdrojoch na pohon automobilov. Rozsiahle výskumné aktivity sú v súčasnosti zamerané na vývoj nových generácií polymérnych elektrolytov a membrán, ktoré by nahradili existujúce membrány vyrobené z Nafionu, ktoré majú vedúce postavenie na trhu. Rýchlo dobíjateľné mikročlánky na báze metanolu sú súčasťou batérií do novej generácie načúvacích prístrojov. Vodivé polymérne kompozity na báze izolačnej polymérnej matrice, napr. elastoméru s vodivými plnivami sa testujú ako súčasti umelých svalov, alebo zariadení na uchovávanie energie. Iónová vodivosť (typickým príkladom sú soli iónov rozpustených v polymérnych matriciach) je základom aplikácií napr. vo flexibilnej elektronike a v lítiových iónových batériách.

Hlavnými témami konferencie EUPOC 2015 boli vodivé polyméry s elektrónovou vodivosťou, iónovo vodivé polyméry, vodivé polymérne kompozity a aplikácie vodivých polymérnych materiálov.

Program EUPOC bol organizovaný tematicky a začal sa dvoma plenárnymi prednáškami v rámci témy polymérne materiály pre bioniku. V prvej z nich profesor Gordon G. Wallace z University of Wollongong, Austrália diskutoval povrchy a rozhrania organickej bioniky. V tejto súvislosti uviedol príklady reálnych zariadení pre klinické aplikácie, ako sú implantáty náhrad nervov, regenerácia svalov a implantovaného bionického zariadenia na detekciu a kontrolu epilepsie. Druhá plenárna prednáška profesora Edwina Jagera z University of Linköking, Švédsko bola venovaná prípravám elektroaktívnych látok pre tkanivové inžinierstvo a mäkké časti robotických zariadení. Predstavil elektricky vodivé polyméry, polypyrolom pokryté nanovlákna pre srdcové tkanivové inžinierstvo.

Na podujatí odznelo celkovo 11 pozvaných plenárnych prednášok, 28 kratších prednášok a odprezentovaných bolo 27 postrov. Na konferencii sa zúčastnilo 75 odborníkov z 27 krajín všetkých piatich kontinentov.

6th International Conference Polymeric Materials in Automotive PMA& 22nd Slovak Rubber Conference, Hotel Park Inn, Bratislava, Slovenská republika, 150 účastníkov, 26.05.-28.05.2015

V dňoch 26.-28. mája 2015 sa uskutočnil v Bratislave 6. ročník medzinárodnej konferencie „Polymeric Materials in Automotive - PMA 2015" spolu s 22. ročníkom medzinárodnej gumárenskej konferencie „Slovak Rubber Conference - SRC 2015".

Cieľom konferencie bolo prezentovať dosiahnuté výsledky výskumu a vývoja v oblasti plastov a elastomérov a upriamiť pozornosť na možnosti a potenciál výskumu a vývoja na Slovensku v oblasti polymérnych materiálov aplikovaných najmä v automobilovom priemysle.

Programovo bola konferencia rozdelená do niekoľkých blokov - úvodného a záverečného bloku plenárnych prednášok a ďalších blokov prednášok prebiehajúcich paralelne v dvoch sekciách:

-sekcii plastov – Plastics in Automotive - PMA 2015

-sekcii gumárenských surovín a výrobkov - Slovak Rubber Conference 2015.

Na úvod programu konferencie odznela netradične prednáška úspešného slovenského dizajnéra doc. Kleina z VŠVÚ v Bratislave podčiarkujúca nevyhnutnosť vývoja nových technológií a materiálov na báze polymérov pre úplne nový segment vozidiel – aeromobily. Prednáška naznačila trendy rozvoja aeromobilov vo svete, v rámci Európskej únie a na Slovensku najmä z hľadiska významu tohto rozbiehajúceho sa segmentu odvetvia automobilovej výroby, ktorý môže vzhľadom na inovatívnosť konštrukcie aeromobilu znamenať v budúcnosti veľký potenciál pre hospodársky rast Slovenska. Úvodný blok pokračoval plenárnou prednáškou prof. M. M. Saina z Univerzity v Toronte o nových ľahkých konštrukciách pre automobilový priemysel založených na nanotechnológiách a kompozitných materiáloch vystužených uhlíkovými vláknami a končil prezentáciou zástupcu firmy JEOL o súčasných možnostiach elektrónovej mikroskopie v štúdiu štruktúry nových polymérnych konštrukčných materiálov.

V odpoludňajšom spoločnom bloku prednášok sa s veľkým ohlasom stretli plenárne prednášky prof. Nishiho z Centra materiálového výskumu v Tokiu o nanotechnológiách pre prípravu elastomérnych, vysoko progresívnych materiálov a prof. Schustera, ktorý prezentoval možnosti aplikácie iónových tekutín ako základu pre nové typy elastomérnych materiálov.

Záverečný časť úvodného dňa konferencie bola venovaná novým postupom a metódam hodnotenia spracovateľnosti polymérov na základe merania reologických vlastností. Ďalšie prezentácie upriamili pozornosť účastníkov na možnosti výskumu v novom technologickom centre firmy Continental v Púchove, ako aj na nové typy meracích a testovacích zariadení pre hodnotenie vlastností polymérnych materiálov. Veľkej pozornosti sa tešila aj skupina prednášok o nových typoch polymérov, spracovateľských prísadách, nanomateriáloch pre konštrukčné aplikácie, možnostiach modifikácie ich vlastností, biopolyméroch a kompozitoch využívajúcich ako zložky biodegradovateľné polyméry, nových technologických aspektoch prípravy zmesí na báze kaučukov, ako aj nových metódach a technológiách recyklácie odpadov z plastov zo starých automobilov, obalov používaných v automobilovom priemysle, ako aj odpadov z gumy, najmä ojazdených plášťov.

V rámci oboch programových sekcií zaujali prezentácie nových metód a postupov analýzy polymérov jednak počas druhého dňa konferencie, ako aj v záverečný deň rokovania. Blok prednášok zameraných na testovanie vlastností bol ukončený vystúpením prof. Wranu, ktorý uviedol úplne nové možnosti hodnotenia termických a dynamicko-mechanických vlastností polymérov.

Na záver konferencie priblížil prof. Giese z DIK v Hannoveri účastníkom konferencie problematiku chemických reakcií, mechanizmov a hodnotenia procesu degradácie, ako aj možností ochrany sieťovaných elastomérnych systémov a prof. Wang z Pekinskej Univerzity chemickej technológie zakončil rokovanie konferencie prednáškou o elastoméroch na báze biopolymérov a polymérov z

obnoviteľných surovín pre technické aplikácie, čím podčiarkol smerovanie výskumu aj v oblasti elastomérov do čoraz širšieho využívania surovín z obnoviteľných zdrojov a biopolymérov.
Spoločným úsilím organizátorov z Ústavu prírodných a syntetických polymérov FCHPT STU v Bratislave a Ústavu polymérov SAV v Bratislave sa podarilo zabezpečiť vysokú úroveň odborného programu konferencie, ktorá si počas desiatich rokov získala pevné miesto medzi medzinárodnými vedeckými a odbornými podujatiami zameranými na gumárske a plastikárske produkty využívané hlavne v oblasti automobilizmu v európskom meradle.
K dobrému priebehu konferencie prispela aj výrazná podpora zo strany sponzorských organizácií najmä firiem JEOL, JD Dvořák, Compuplast, ale aj Recyklačného fondu a firiem Mettler Toledo, Continental a Pragolab. Propagácii konferencie a zvýrazneniu jej dôležitosti výrazne prospela aj účasť mediálnych partnerov z radov zahraničných a domácich vedeckých a odborných časopisov (KGK, Gumárske listy, Strojárstvo a tiež podpora zo strany internetového portálu Plastic Portal.
V rámci konferencie odznelo celkovo 10 plenárnych prednášok, 15 kľúčových prednášok a 21 krátkych prednášok v oboch programových sekciách. Program konferencie bol doplnený sekciou 28 posterov a celkový rámec podujatia umocnila aj prezentácia viacerých firiem vyrábajúcich laboratórnu techniku a zariadenia na testovanie vlastností polymérnych materiálov. Časový program konferencie vytvoril priestor aj na širokú výmenu názorov, rozvinutie osobných kontaktov, ako aj možnosť dohodnutia spolupráce pri tvorbe nových projektov.
Veľkým plusom konferencie bola prítomnosť veľkého počtu zahraničných účastníkov - z celkového počtu 119 aktívnych účastníkov bolo viac ako 50 % registrovaných účastníkov zo 16 krajín prakticky z celého sveta, čo svedčí o skutočnosti, že konferencia sa stala zaujímavým odborným a vedeckým fórom nielen v európskom meradle.
Popri odbornom programe poskytli organizátori účastníkom priestor a možnosť na spoznanie kultúrnych tradícií Slovenska vystúpením folklórnej zložky súboru Technik. Výkony slovenských umelcov očarili prítomných a určite boli významnou podporou pozvaniu na budúci 7. ročník konferencie PMA 2017, ktorý sa spolu s 23. ročníkom gumárskej konferencie SRC 2017 bude konať v apríli, resp. v máji 2017 v Bratislave.

67. zjazd chemikov, GRAND HOTEL BELLEVUE, Horný Smokovec, Vysoké Tatry Slovenská republika, 270 účastníkov, 07.09.-11.09.2015

4.1.2. Medzinárodné vedecké podujatia, ktoré usporiada organizácia SAV v roku 2016 (anglický a slovenský názov podujatia, miesto a termín konania, meno, telefónne číslo a e-mail zodpovedného pracovníka)

1. BYPoS 2016 - 6th Bratislava Young Polymer Scientists workshop (Šiesty bratislavský workshop mladých vedcov so zameraním na celú oblasť polymérnej chémie)**,** Hotel Bachledka***, Vysoké Tatry, Slovensko, ca 40 účastníkov, 14.03.-18.03.2016, (Alena Šišková, 02/ 3229 4301, alena.siskova@savba.sk)
Už po šiestykrát Rada mladých vedcov pri Ústave polymérov SAV organiyuje workshop mladých, šikovných a nádejných vedcov. Tento ročník BYPoSu je vsadený do krásneho prostredia Vysokých Tatier. Konferencia sa bude konať 14.–18.03.2016 v hoteli Bachledka vo Vysokých Tatrách.
Pozvanie organizačného výboru na úvodné prednášky prijali prof. Christian Paulik z Johannes Kepler Universität Linz v Rakúsku, Dr. Jürgen Pionteck z Leibniz-Institut für Polymerforschung Dresden, Nemecko,Dr. Juraj Kronek, Polymer Institute of the Slovak Academy of Sciences, Bratislava, Slovensko a Dr. Karoly Renner, Budapest University of Technology and Economics, Budapest, Maďarsko. Podrobnejšie informácie o prednáškach nájdete na www.polymer.sav.sk/bypos.

2**. New trends in solar cells and WG and MC meeting of COST MP 1307,** Lindner Hotel Gallery Central, Bratislava, Slovensko, ca 120 účastníkov, 19.04.-22.04.2016, (Mária Omastová, 02/ 3229

4312, maria.omastova@savba.sk)
The conference will focus on recent progress, current challenges and future directions for solar-cell technologies and characterization.

Major Topics (preliminary):

Organic solar cells
Dye-sensitised solar cells
Perovskite solar cells
Organic-inorganic hybrid solar cells
Device modeling

3. **9th Slovak – Czech Conference Polymers 2016 /IX. Slovensko-Česká konferencia Polyméry 2016,** Hotel Academia – KC Stará Lesná, 08.06.-10.06.2016, (Peter Cifra, 02/ 3229 4313, peter.cifra@savba.sk)

4. **BIMac 2016 - XXII. Bratislava international conference on Macromolecules - 22. Bratislavská konferencia o makromolekulách**, Hotel Holday Inn, Bratislava, Slovensko, ca 130 účastníkov, 06.09.-09.09.2016, (Jaroslav Mosnáček, 02/ 3229 4353, Jaroslav.mosnacek@savba.sk)

4.1.3. Počet pracovníkov v programových a organizačných výboroch medzinárodných konferencií

Tabuľka 4a Programové a organizačné výbory medzinárodných konferencií

Typ výboru	Programový	Organizačný	Programový i organizačný
Počet členstiev	5	5	1

4.2. Členstvo a funkcie v medzinárodných orgánoch

4.2.1. Členstvo a funkcie v medzinárodných vedeckých spoločnostiach, úniách a národných komitétoch SR

Doc. Ing. Dušan Berek, DrSc.

Medzinárodný vedecký výbor Sympózií o separačných vedách (funkcia: tajomník)
Central European Group of Separation Sciences (funkcia: tajomník riadiaceho výboru)

Mgr. Peter Kasák, PhD.

Bioadhesive Research Group a COST TD0906 (funkcia: člen)

Mgr. Juraj Kronek, PhD.

Society for Biomedical Polymers and Polymeric Biomaterials (funkcia: člen)
Spoločné poľsko-slovenské laboratórium SYNADPOL (funkcia: koordinátor)

Ing. Igor Lacík, DrSc.

Associate Member IUPAC (funkcia: člen)
Bioencapsulation research Group (funkcia: člen)
European Association for the Studies of Diabetes (funkcia: člen)
IUPAC Subcommittee Subcommittee Modeling of Polymerization Kinetics and Processes (funkcia: člen)

Mgr. Jaroslav Mosnáček, PhD.

Americká chemická spoločnosť (funkcia: člen)

Ing. Igor Novák, PhD.

Society of Plastics Engineers, Antwerpy, Belgicko (funkcia: člen)

Ing. Mária Omastová, DrSc.

European Polymer Federation (funkcia: národný reprezentant SR)

Ing. Filip Rázga, PhD.

CELL - The Czech leukemia study group for life (funkcia: člen)

4.3. Účasť expertov na hodnotení medzinárodných projektov (EÚ RP, ESF a iných)

Tabuľka 4b Experti hodnotiaci medzinárodné projekty

Meno pracovníka	Typ programu/projektu/výzvy	Počet hodnotených projektov
Chodák Ivan	APVV oponentúra bilaterálneho projektu SK-PL	1
Chodák Ivan	Czech Science Foundation	1
Chodák Ivan	National Research Foundation of South Africa	1
Mosnáček Jaroslav	National Science Centre (Narodowe Centrum Nauki – NCN), Poľsko	1
Novák Igor	Poľská academia vied	1
Omastová Mária	Grantová agentúra ČR	1

4.4. Najvýznamnejšie prínosy MVTS ústavu vyplývajúce z mobility a riešenia medzinárodných projektov a iné informácie k medzinárodnej vedeckej spolupráci

Cifra Peter	Hodnotenie ústavov AV ČR- posudzovanie 25 výstupov v účasti na I.fáze hodnotenia
Danko Martin	Technologické centrum AV ČR - hodnotenie 4 výstupov vedeckej organizácie v ČR- METODIKA CZ

Prehľad údajov o medzinárodnej mobilite pracovníkov organizácie je uvedený v Prílohe E.
Prehľad a údaje o medzinárodných projektoch sú uvedené v kapitole 2 a Prílohe B.

5. Vedná politika

Účasť ústavu na rozvoji vednej politiky sa realizovala a realizuje cez člena SKVH Ing. Igora Lacíka, DrSc. a zastúpením pracovníkov ústavu v predsedníctve SAV, Sneme SAV, v Rade riaditeľov II. Oddelenia vied a ďalších komisiách SAV a mimo SAV, ako aj v komisiách grantových agentúr VEGA a APVV.

6. Spolupráca s univerzitami/vysokými školami, štátnymi a neziskovými inštitúciami okrem aktivít uvedených v kap. 2, 3, 4

6.1. Spolupráca s univerzitami/VŠ (fakultami)

Názov univerzity/vysokej školy a fakulty: Prírodovedecká fakulta UK
Druh spolupráce (spoločné pracovisko alebo iné): Chemický ústav-neformálna spolupráca, spoločné výsledky a publikácie
Začiatok spolupráce: 2010
Zameranie: spektrálna charakterizácia organických molekúl v roztokoch a polymérových matriciach pre aplikácie vo fotonike a senzorike
Zhodnotenie: Spolupráca v roku 2015 vyústila do komplexnej fotofyzikálnej charakterizácie derivátov s benzo(tris)tiazolínovým akceptorom a aminoarylovým donorom v polymérnych matriciach polyvinylchloridu a aniónového polystyrén sulfonátu. Spoločná práca bude v najbližšej dobe odoslaná do SCI časopisu.

Názov univerzity/vysokej školy a fakulty: Fakulta chemickej a potravinárskej technológie STU
Druh spolupráce (spoločné pracovisko alebo iné): spoločné pracovisko
Začiatok spolupráce: 2008
Zameranie: výskum biodegradovateľných plastov
Zhodnotenie: Spolupráca je veľmi plodná, v roku 2015 bola zameraná predovšetkým na intenzívnu činnosť pri zavádzaní spoločného patentu do priemyselnej praxe. Úsilie sa venovalo technologickým otázkam súvisiacim so zamýšľanou komerčnou výrobou granulátu na báze zmesi biodegradovateľných plastov polyhydroxybutyrát / kyselina polymliečna, alesúčasne sa riešilo viacero ekonomických a legislatívnych otázok súvisiacich s prebiehajúcim procesom patentovej ochrany v EU a vo viacerých ďalších krajinách.Začali sa práce na detailnej charakterizácii materiálov na báze biodegradovateľných plastov metódou NMR. Tieto merania priniesli nové poznatky týkajúce sa vplyvu plastifikátora na pohyblivosť makromolekúl, ktoré umožňujú lepšie pochopiť dôvod pre relatívne vysokú húževnatosť nami patentovanej zmesi v porovnaní s krehkými materiálmi s veľmi podobným zložením. Spoločná publikácia vyšla v impaktovanom časopise: OLČÁK, D. - HRONSKÝ, V. - KOVAĽAKOVÁ, M. - VRÁBEL, P. - CHODÁK, Ivan - ALEXY, P. High-resolution solid-state NMR characteriz

Názov univerzity/vysokej školy a fakulty: Materiálovotechnologická fakulta STU v Trnave
Druh spolupráce (spoločné pracovisko alebo iné): Ústav výrobných technológií -bilaterálna spolupráca
Začiatok spolupráce: 2012
Zameranie: Výskum vlastností vybraných typov adhéznych spojov.
Zhodnotenie: Boli skúmané povrchové úpravy ocele použitím rôznych chemických modifikačných metód a bol skúmaný vplyv týchto úprav na pevnosť adhéznych spojov. Použitím nitrooxidačnej modifikačnej metódy na povrchovú úpravu ocele sa dosiahlo zníženie povrchovej energie ocele o 30%, pričo nastal rast pevnosti adhéznych spojov v závislosti od typu použitého adhezíva až o 60%. Ukázalo sa, že najvyšší prírastok pevnosti adhézneho spoja bol pre oceľ upravenú nitrooxidáciou dosiahnutý pri použiti epodových adhezív. Rast pevnosti adhéznych spojov porovnateľný s použitím nitrooxidácie bol dosiahnutý pri modifikácii povrchu ocele nízkoteplotnou koplanárnou bariérovou plazmou.

Názov univerzity/vysokej školy a fakulty: Fakulta záhradníctva a krajinného inžinierstva SPU
Druh spolupráce (spoločné pracovisko alebo iné): katedra zeleninárstva -spolupráca na VEGA projekte č. 2/0167/14
Začiatok spolupráce: 2014

Zameranie: Výskum biodegradovateľnej mulčovacej fólie a jej využitie v oblasti pôdohospodárstva

Zhodnotenie: Štúdium degradácie mulčovacej fólie na báze PLA-PHB (poly(lactic acid)-poly(3-hydroxybutyrate)). Degradácia bola sledovaná v reálnych podmienkach pri pestovaní papriky ako aj pri umelom UV ožarovaní. Fólia sa podrobila testu degradácie v reálnych i umelých podmienkach a stanovili sa mechanické vlastnosti v rôznych časoch degradácie ako aj v závislosti od umiestnenia fólie pri samotnom mulčovaní (pod rastlinou, v pôde, resp. nekrytá). Starnutie fólie bolo sledované pomocou GPC a mechanické vlastnosti pomocou DSC. Reálne vzorky ako aj vzorky použité pri UV ožarovaní preukazovali nárast elastického modulu. Ťahové skúšky potvrdili zmenu ťahového napätia i predĺženia po 60 dňoch okrem vzoriek, ktoré sa nachádzali zakopané v pôde. Preukázal sa pozitívny efekt mulčovacej fólie na úrodu sladkej papriky, čo sa prejavilo nárastom hmotnosti plodu a väčším množstvom karotenoidov pri zachovaní koncentrácie vitamínu C.

Názov univerzity/vysokej školy a fakulty: Vysoká škola výtvarných umení v Bratislave

Druh spolupráce (spoločné pracovisko alebo iné): Oddelenie textilu -spolupráca v rámci projektu

Začiatok spolupráce: 2015

Zameranie: Prepojenie textilných technológii s abstraktným umením

Zhodnotenie: téma spolupráce „Svetlo priestoru 2“ o prepojení textilných technológii s abstraktným umením sa riešila v rámci projektu Centrum aplikovaného výskumu nových materiálov a transferu technológií, ITMS 26240220088, kde participujú aj ďalšie ústavy SAV. Výsledkom spolupráce boli diela prezentované a vystavované na:•ART WEEKEND, 15.-17. máj 2015, vernisáž študentských prác. Štúdio Art of Textile, VŠVU, Drotárska 44, Bratislava.•TEXTILE ART OF TODAY, medzinárodná putovná výstava súčasnej umeleckej textilnej tvorby pod záštitou ministrov kultúry krajín V4. Slovenské národné múzeum - Historické múzeum - Bratislavský hrad, september – december 2015.•Vernisáž NEW FUTURE, galéria Vestředu, Plzeň 11.11.2015. Práca bola inštalovaná ako súčasť výstavy v spomenutej galérii v termíne od 11.11.2015 – 28.11.2015

6.2. Významné aplikácie výsledkov výskumu v spoločenskej praxi alebo vyriešenie problému pre štátnu alebo neziskovú inštitúciu

Zadávateľ, odberateľ, zmluvný partner: ECOSON, s.r.o., Nové Mesto nad Váhom

Názov aplikácie/objekt výskumu: Lepenie UZ meničov

Začiatok spolupráce: 2009

Stručný opis aplikácie/výsledku: lepenie generátorov ultrazvuku na vaničky z chrómniklovej ocele

Zhodnotenie (uviesť i finančný efekt z aplikácie v € pre organizáciu SAV): povrchovo upravené UZ meniče sa lepia epoxidovým adhezívom na upravený povrch chrómniklovešj ocele. Lepenie generátorov ultrazvuku bolo v roku 2015 realizované bez reklamácie zo strany odberateľov - príjem pre ÚPo 3 892.04 €

Zadávateľ, odberateľ, zmluvný partner: SOS Electronic spol. s r.o., Košice

Názov aplikácie/objekt výskumu: Elektricky vodivé adhezívum Gravipol Electro

Začiatok spolupráce: 2009

Stručný opis aplikácie/výsledku: elektricky vodivé jednozložkové ekologické adhezívum

Zhodnotenie (uviesť i finančný efekt z aplikácie v € pre organizáciu SAV): jednozložkové elektricky vodivé adhezívum Gravipol Electro sa dodáva na opravy mikroelektronoky. Finančný efekt v roku 2015: 1 760.0 €

6.3. Iná činnosť využiteľná pre potreby spoločenskej praxe

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7. Spolupráca s aplikačnou a hospodárskou sférou okrem aktivít uvedených v kap. 2, 3, 4

7.1. Spoločné pracoviská s aplikačnou sférou

7.2. Kontraktový – zmluvný výskum (vrátane zahraničných kontraktov)

Názov kontraktu: New materials for adhesive polymers in dental composites.

Partner(i): IVOCLAR VIVADENT, AG. Schaan, Liechtenstein.

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2014

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015

Objem získaných prostriedkov v bežnom roku (€): 27173

Stručný opis výstupu/výsledku: Štúdium kinetiky homopolymerizácie a kopolymerizácie s metylmetakrylátom troch nových monomérov určených pre adhezíva aplikované do "self-etching" dentálnych kompozitov. V prípade kopolymerizácie sa okrem kinetiky polymerizácie jednalo aj o určenie kopolymerizačných parametrov. Vypracovanie a obhájenie výskumnej správy; spísanie a odoslanie rukopisu z predchádzajúcich výsledkov za rok 2013/2014 - publikácia CHMELA, Štefan – PAVLINEC, Juraj – FIEDLEROVÁ, Agnesa – CATEL, Y. – MOSZNER, N. Determination of homopolymerization kinetics of 10-(N-methylacrylamido)-decylphosphonic acid, its diethyl ester, and 10-(methacryloyloxy)-decylphosphonic acid, and their copolymerization with methyl methacrylate. In Macromolecular Chemistry and Physics, DOI: 10.1002/macp.201500237; diskusia o budúcej náplni v rámci plánovaného predĺženia projektu.

Zhodnotenie: Zachovanie kontinuity spolupráce s Ivoclar Vivadent bolo významným vedeckým ako aj finančným prínosom pre ÚPo.

Názov kontraktu: Meranie horľavosti PUR pien

Partner(i): Borcad Fryčovice, ČR

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015

Objem získaných prostriedkov v bežnom roku (€): 247

Stručný opis výstupu/výsledku: Pomocou kónického kalorimetra bola testovaná horľavosť rozličným spôsobom upravených polyuretánových pien pre kreslá a lôžka v železničnej preprave.

Názov kontraktu: Meranie horľavosti PUR pien

Partner(i): Kingspan Hradec Králové, ČR

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015

Objem získaných prostriedkov v bežnom roku (€): 396

Stručný opis výstupu/výsledku: Pomocou kónického kalorimetra bola testovaná horľavosť rozličným spôsobom upravených polyuretánových pien pre kreslá a lôžka v zdravotníctve.

Názov kontraktu: Opis horľavosti epoxidových živíc

Partner(i): Univerzita Pardubice

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015

Objem získaných prostriedkov v bežnom roku (€): 365

Stručný opis výstupu/výsledku: Pomocou kónického kalorimetra bola testovaná horľavosť rozličným spôsobom upravených epoxidov

Názov kontraktu: Recenzia slovensko, nemecko, anglického slovníka chemických výrazov
Partner(i): Fakulta chemickej a potravinárskej technológie STU
Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015
Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015
Objem získaných prostriedkov v bežnom roku (€): 3200
Stručný opis výstupu/výsledku: Recenzia slovensko, nemecko, anglického slovníka chemických výrazov

Názov kontraktu: Termická oxidácia polyamidov študovaná chemiluminiscenciou
Partner(i): Clariant Hamburg
Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015
Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015
Objem získaných prostriedkov v bežnom roku (€): 671
Stručný opis výstupu/výsledku: Neizotermickou chemiluminiscenciou bola otestovaná termická stabilita 17 vzoriek polyamidov stabilizovaných zmesnými systémami fenolických antioxidantov.

Názov kontraktu: Štúdium vplyvu zvýšenej teploty na mechanické vlastnosti membránových zmesí na báze butylkaučuku ako dôsledku úbytku zmäkčovadiel.
Partner(i): Continental, a.s. Púchov
Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015
Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2016
Objem získaných prostriedkov v bežnom roku (€): 0
Stručný opis výstupu/výsledku: V prvej fáze riešenia sa vybrali, otestovali a prispôsobili experimentálne metódy pre meranie termickej stability materiálu membrány v laboratórnych podmienkach a otestovala sa stabilita v súčasnosti používanej zmesi v úlohe referenčného materiálu.
Zhodnotenie: K dispozícii sú základné experimentálne údaje, s ktorými možno porovnávať účinok prirpavovaných modifikácií.

Názov kontraktu: Stanovenie rýchlostných konštánt a modelovanie súčasných v budúcnosti študovaných polymerizačných procesov a systémov v BASF. (Kinetic coefficients and models for existing and future polymerization processes and systems at BASF).
Partner(i): BASF SE Ludwigshafen (Nemecko), Queen's University, Kingston (Kanada)
Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015
Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2018
Objem získaných prostriedkov v bežnom roku (€): 8750
Stručný opis výstupu/výsledku: získanie individuálnych rýchlostných konštánt pre rôzne homopolymerizačné a kopolymerizačné systémy.
Zhodnotenie: v spolupráci s partnermi sa zadefinovali systémy, ktoré budú študované, a navrhli sa spôsoby charakterizácie kinetiky polymerizácie a podmienky charakterizácie molekulových hmotností metódou SEC.

7.3. Iná činnosť využiteľná pre potreby hospodárskej praxe

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8. Aktivity pre Národnú radu SR, vládu SR, ústredné orgány štátnej správy SR a iné organizácie

8.1. Členstvo v poradných zboroch vlády SR, Národnej rady SR, ministerstiev SR, orgánoch EÚ, EP, NATO a pod.

Tabuľka 8a Členstvo v poradných zboroch Národnej rady SR, vlády SR, ministerstiev SR, orgánoch EÚ, EP, NATO a pod.

Meno pracovníka	Názov orgánu	Funkcia
prof. Ing. Ivan Chodák, DrSc.	Ministerstvo školstva SR	člen štátnej skúšobnej komisie pre študijný odbor Polymérne materiály, 0120 Plasty a kaučuk (FCHPT STU)
Ing. Igor Lacík, DrSc.	Ministerstvo školstva SR	člen Slovenskej komisie pre vedecké hodnosti SKVH
Ing. Igor Lacík, DrSc.	Ministerstvo zdravotníctva SR	konzultant pre Strategický výskumný program biotechnológie a biomedicína

8.2. Expertízna činnosť a iné služby pre štátnu správu a samosprávy

Názov expertízy: expert pre akreditáciu skúšobných laboratórií pre SNAS
Adresát expertízy: Slovenská národná akreditačná služba
Spracoval: prof. Ing. Ivan Chodák, DrSc.

Názov expertízy: člen technickej komisie 39 PLASTY
Adresát expertízy: Slovenský ústav technickej normalizácie
Spracoval: Ing. Igor Novák, PhD.

8.3. Členstvo v radách štátnych programov a podprogramov ŠPVV a ŠO

Tabuľka 8b Členstvo v radách štátnych programov a podprogramov ŠPVV a ŠO

Meno pracovníka	Názov orgánu	Funkcia
Ing. Igor Lacík, DrSc.	Rada APVV pre prírodné vedy	člen

8.4. Prehľad aktuálnych spoločenských problémov, ktoré riešilo pracovisko v spolupráci s Kanceláriou prezidenta SR, s vládnymi a parlamentnými orgánmi alebo pre ich potrebu

9. Vedecko-organizačné a popularizačné aktivity

9.1.Vedecko-popularizačná činnosť

9.1.1. Najvýznamnejšia vedecko-popularizačná činnosť pracovníkov organizácie SAV

Tabuľka 9a Vedecko-popularizačná činnosť pracovníkov organizácie SAV

Meno	Spoluautori	Typ[1]	Názov	Miesto zverejnenia	Dátum alebo počet za rok
Mgr. Zuzana Benková, PhD.		EX	Zasimulujme si	Deň otvorených dverí, ÚPo SAV	11.11.2015
Mgr. Zuzana Benková, PhD.		PB	Zasimulujme si	Deň otvorených dverí, ÚPo SAV	11.11.2015
Ing. Katarína Borská, PhD.	Šišková Alena, Moravčíková Daniela	EX	Inšpirácie z prírody	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Katarína Borská, PhD.	Šišková Alena, Moravčíková Daniela	PB	Inšpirácie z prírody	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Klaudia Czaniková, PhD.		PB	Polymérna čajovňa	Deň otvorených dverí, ÚPo SAV	11.11.2015
prof. Ing. Ivan Chodák, DrSc.		TV	Krátke vyjadrenie k transformácii SAV na v.v.i.	RTVS - hlavné správy dĺžka cca 1 min	20.11.2015
prof. Ing. Ivan Chodák, DrSc.		TL	TOP 25 inovátorov Slovenska	Týždenník Trend	16.7.2015
prof. Ing. Ivan Chodák, DrSc.		RO	Vyjadrenie k bezpečnosti jazdy pri starých pneumatikách.	Regina RTVS	2015
Ing. Lucia Kleščíková, PhD.		PB	Polymérna čajovňa	Deň otvorených dverí, ÚPo SAV	11.11.2015
Mgr. Jozef Kollár, PhD.		PB	Polymérna čajovňa Hydrogély - polyméry pre život	Deň otvorených dverí, ÚPo SAV	11.11.2015
Mgr. Jozef Kollár, PhD.	Moravčíková Daniela	PB	Hydrogély, polyméry a svetlo	Veda má budúcnosť 2015, ÚPo SAV	5.6.2015
Mgr. Jozef Kollár, PhD.	Moravčíková Daniela	EX	Hydrogély, polyméry a svetlo	Veda má budúcnosť 2015, ÚPo SAV	5.6.2015
Mgr. Juraj Kronek, PhD.		EX	Farebné do modra	Galéria ÚĽUV	2015
Mgr. Zuzana Kroneková, PhD.	Šrámková Petra, Zahoranová Anna	EX	Bunky a polyméry	Deň otvorených dverí, ÚPo SAV	11.11.2015
Mgr. Zuzana Kroneková, PhD.	Šrámková Petra, Zahoranová Anna	PB	Bunky a polyméry	Deň otvorených dverí, ÚPo SAV	11.11.2015
Ing. Igor Lacík, DrSc.		RO	Magazín	Regina RTVS	7.9.2015
Ing. Igor Lacík, DrSc.		TV	Na pohovke s Igorom Lacíkom	Dúbravská televízia	2015

Ing. Igor Lacík, DrSc.		RO	Nočná pyramída – liečba diabetu	SRO1 RTVS	10.6.2015
Ing. Igor Lacík, DrSc.		PB	Skúsenosti s popularizáciou vedy z pohľadu vedcov.	Workshop PopVaT I. - Popularizácia a komunikácia vo vede, CVTI, Bratislava	22.4.2015
Ing. Igor Lacík, DrSc.		PB	Zdravie a medicína budúcnosti	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Daniela Moravčíková, PhD.		PB	Polymérna čajovňa Hydrogély - polyméry pre život	Deň otvorených dverí, ÚPo SAV	11.11.2015
Mgr. Jaroslav Mosnáček, PhD.		PB	Ústav polymérov SAV – história polymérov a polymérnych materiálov, súčasný výskum	Projekt Veda má budúcnosť pre žiakov stredných škôl - ÚPo	18.5.2015
Mgr. Veronika Némethová	Rázga Filip	PB	Polymérmi proti rakovine	KHaT – Nemocnica Antolská	18.2.2015
Ing. Igor Novák, PhD.		PB	Polymérna čajovňa	Deň otvorených dverí, ÚPo SAV	11.11.2015
Ing. Mária Omastová, DrSc.		PB	Polymérne nanokompozity a ich aplikácie.	CVTI, Bratislava	29.10.2015
Ing. Filip Rázga, PhD.		IN	Klub akčných hrdinov	CVTI, Bratislava	2015
Ing. Filip Rázga, PhD.	Uhelská Lucia, Treľová Dušana, Némethová Veronika, Kleščíková Lucia, Mazancová Petra	EX	Liečba diabetu ponovom	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Filip Rázga, PhD.	Uhelská Lucia, Treľová Dušana, Némethová Veronika, Kleščíková Lucia, Mazancová Petra	PB	Liečba diabetu ponovom	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Alena Šišková, PhD.	Číková Eliška	PB	Polyméry z prírody	Deň otvorených dverí, ÚPo SAV	11.11.2015
Ing. Alena Šišková, PhD.	Číková Eliška	EX	Polyméry z prírody	Deň otvorených dverí, ÚPo SAV	11.11.2015
Ing. Alena Šišková, PhD.	Moravčíková Daniela	PB	Výrobky elektro-statického zvlákňovania a ich využitie	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015
Ing. Alena Šišková, PhD.	Moravčíková Daniela	EX	Výrobky elektro-statického zvlákňovania a ich využitie	Európska noc výskumníka – 9. ročník, stánok ÚPo SAV pre verejnosť, Stará tržnica	25.9.2015

Mgr. Zdenko Špitálsky, PhD.		EX	Elektricky vodivé poly- mérne nanokompozity	Projekt Veda má budúcnosť pre žiakov stredných škôl- ÚPo	18.5.2015
Mgr. Zdenko Špitálsky, PhD.		PB	Elektricky vodivé poly- mérne nanokompozity	Projekt Veda má budúcnosť pre žiakov stredných škôl- ÚPo	18.5.2015
Mgr. Anna Zahoranová		RO	Fokus - doktorandi	RTVS	10.12.2015
Ing. Igor Lacík, DrSc.		iné	Výskum enkapsulovaných ostrovčekov pokračuje	Diabetik, 2015, roč. 14, č. 1-2, s. 28-29	1
Ing. Igor Novák, PhD.		PB	Špeciálne adhezíva.	(www.incheba.sk)	4
Ing. Igor Novák, PhD.		IN	Špeciálne adhezíva.	www.agrokomplex.sk	4
Ing. Igor Novák, PhD.	Žigo Ondrej, Valentín Marian	iné	Polymérne materiály a ich využitie pri výrobe automobilov.	Plastics Production, 2015, roč. X, č. 1, s. 52-54. ISSN 1802-1549	1
Ing. Igor Novák, PhD.	Žigo Ondrej, Valentín Marian, Prachar Jozef	iné	Aplikácie polymérov a využitie lepenia pri výrobe automobilov pri súčasnej výrobe automobilov.	Plastics Production, 2015, roč. X, č. 2, s.66-68. ISSN 1802-1549	1

[1] PB - prednáška/beseda, TL - tlač, TV - televízia, RO - rozhlas, IN - internet, EX - exkurzia, PU - publikácia, MM - multimédiá, DO - dokumentárny film

9.1.2. Súhrnné počty vedecko-popularizačných činností organizácie SAV

Tabuľka 9b Súhrnné počty vedecko-popularizačných činností organizácie SAV

Typ	Počet	Typ	Počet	Typ	Počet
prednášky/besedy	19	tlač	1	TV	2
rozhlas	4	internet	2	exkurzie	9
publikácie	3	multimediálne nosiče	0	dokumentárne filmy	0
iné	0				

9.2. Vedecko-organizačná činnosť

Tabuľka 9c Vedecko-organizačná činnosť

Názov podujatia	Domáca/ medzinárodná	Miesto	Dátum konania	Počet účastníkov
EUPOC 2015 - Vodivé polyméry	medzinárodná	Gargano, Lago di Garda, Taliansko	24.05.-28.05.2015	75
6th International Conference Polymeric Materials in Automotive PMA &22nd Slovak Rubber Conference	medzinárodná	Hotel Park Inn, Bratislava, Slovenská republika	26.05.-28.05.2015	150
67. zjazd chemikov	medzinárodná	Hotel Bellevue, Horný Smokovec, Vysoké Tatry Slovenská republika	07.09.-11.09.2015	270

9.3. Účasť na výstavách

Názov výstavy: Vernisáž NEW FUTURE
Miesto konania: galéria Vestředu, Plzeň - práca bola inštalovaná ako súčasť výstavy
Dátum: 11.-28.11.2015
Zhodnotenie účasti: Diela, ktoré vznikli v rámci projektu Centrum aplikovaného výskumu nových materiálov a transferu technológií, ITMS 26240220088 a sú výsledkom spolupráce s oddelením textilu VŠVU na tému Svetlo priestoru 2 - Prepojenie textilných technológii s abstraktným umením (zodpovedná pracovníčka – Šišková Alena):

Názov výstavy: TEXTILE ART OF TODAY, medzinárodná putovná výstava súčasnej umeleckej textilnej tvorby pod záštitou ministrov kultúry krajín V4.
Miesto konania: Slovenské národné múzeum - Historické múzeum - Bratislavský hrad
Dátum: 09.2015
Zhodnotenie účasti: Diela, ktoré vznikli v rámci projektu Centrum aplikovaného výskumu nových materiálov a transferu technológií, ITMS 26240220088 a sú výsledkom spolupráce s oddelením textilu VŠVU na tému Svetlo priestoru 2 - Prepojenie textilných technológii s abstraktným umením (zodpovedná pracovníčka – Šišková Alena):

Názov výstavy: 42. medzinárodná poľnohospodárska a potravinárska výstava Agrokomplex 2015
Miesto konania: stánok SAV, výstavisko Agrokomplex, Nitra
Dátum: 8.2015
Zhodnotenie účasti: inštalácie a propagácie špeciálnych adhezív z Ústavu polymérov (zodpovedný pracovník - Novák Igor)

Názov výstavy: 17. medzinárodná zdravotnícka výstava Slovmedica 2015
Miesto konania: stánok SAV, výstavisko Incheba Expo, Bratislava
Dátum: 10.2015
Zhodnotenie účasti: inštalácie a propagácie špeciálnych adhezív z Ústavu polymérov (zodpovedný pracovník - Novák Igor)

Názov výstavy: 23. medzinárodný veľtrh strojov, nástrojov, zariadení a technológií
Miesto konania: stánok Slovenskej zváračskej spoločnosti, výstavisko Agrokomplex, Nitra
Dátum: 05.2015
Zhodnotenie účasti: inštalácie a propagácie špeciálnych adhezív z Ústavu polymérov (zodpovedný pracovník - Novák Igor)

Názov výstavy: ART WEEKEND- vernisáž študentských prác
Miesto konania: Štúdio Art of Textile, VŠVU, Drotárska 44, Bratislava.
Dátum: 15.5.2015
Zhodnotenie účasti: Diela, ktoré vznikli v rámci projektu Centrum aplikovaného výskumu nových materiálov a transferu technológií, ITMS 26240220088 a sú výsledkom spolupráce s oddelením textilu VŠVU na tému Svetlo priestoru 2 - Prepojenie textilných technológii s abstraktným umením -(zodpovedná pracovníčka – Šišková Alena)

Názov výstavy: 36. medzinárodný veľtrh Coneco 2015 a 25. ročník veľtrhu Racioenergia
Miesto konania: výstavisko Incheba Expo, Bratislava
Dátum: 3.2015
Zhodnotenie účasti: inštalácie a propagácie špeciálnych adhezív z Ústavu polymérov (zodpovedný pracovník - Novák Igor)

9.4. Účasť v programových a organizačných výboroch národných konferencií

Tabuľka 9d Programové a organizačné výbory národných konferencií

Typ výboru	Programový	Organizačný	Programový i organizačný
Počet členstiev	0	2	2

9.5. Členstvo v redakčných radách časopisov

Doc. Ing. Dušan Berek, DrSc.

Chemistry and Chemical Technology (Ukraina) (funkcia: člen edičnej rady)
International Journal of Polymeric Materials (USA) (funkcia: člen edičnej rady)
Macromolecules - An Indian Journal (India) (funkcia: člen edičnej rady)

Ing. Zuzana Hloušková

ChermZi (funkcia: člen redakčnej rady)

Prof. Ing. Ivan Chodák, DrSc.

Open Macromolecules Journal (TOMAC), Bentham Open (funkcia: člen redakčnej rady)
Plasty a kaučuk (ČR) (funkcia: člen edičnej rady)

Mgr. Jaroslav Mosnáček, PhD.

časopis ISRN Polymer Science (funkcia: člen edičnej rady)
Frontiers in Materials: Composite Materials (funkcia: review editor časopisu)

Ing. Igor Novák, PhD.

CHEMagazín (ČR) (funkcia: externý člen edičnej rady)
Urob si sám (funkcia: člen redakčnej rady)

Ing. Mária Omastová, DrSc.

ChemZi (funkcia: členka redakčnej rady)

9.6. Činnosť v domácich vedeckých spoločnostiach

Doc. Ing. Dušan Berek, DrSc.

Slovenkej chemickej spoločnosti (funkcia: čestný člen)
Slovenský národný komitét chémie pre IUPAC (funkcia: podpredseda)
výbor odborných skupín Polyméry a Chromatografia SCHS (funkcia: člen)

Mgr. Martin Danko, PhD.

SCHS (funkcia: člen výboru odbornej skupiny Polyméry)

RNDr. Agnesa Fiedlerová

SCHS (funkcia: tajomníčka výboru odbornej skupiny Polyméry)

Štefan Chmela, DrSc.

SCHS (funkcia: člen výboru odbornej skupiny Polyméry)

Mgr. Juraj Kronek, PhD.

SCHS (funkcia: Podpredseda odbornej skupiny Polyméry)

Ing. Igor Lacík, DrSc.

Slovenský národný komitét IUPAC (funkcia: člen)

Ing. Mária Omastová, DrSc.

SCHS (funkcia: podpredsedníčka výboru odbornej skupiny Polyméry)
SCHS (funkcia: predsedníčka)

9.7. Iné dôležité informácie o vedecko-organizačných a popularizačných aktivitách

V r. 2015 Ústav polymérov SAV organizoval a spoluorganizoval jedno národné a dve medzinárodné vedecké podujatia:

- 67. Zjazd chemikov, 7. – 11. septembra 2015, Grand Hotel Bellevue, Vysoké Tatry
- 6th International Conference on Polymeric Materials in Automotive & 22nd Slovak Rubber Conference, 26. – 28. mája 2015, Hotel Park Inn Danube, Bratislava
- Europolymer Conference EUPOC 2015 Conducting Polymeric Materials, 24. – 28. mája 2015, Gargnano, Italy

Ústav polymérov SAV pokladá za významné vedecko-popularizačné aktivity v rôznych médiách v zmysle súčasných trendov SAV. Propagácia sa v roku 2015 týkala mnohých vystúpení formou tlače, rozhlasu, televízie, internetu, osobných stretnutí a pod. Projekty a celková činnosť ústavu boli opäť úspešne prezentované na Noci výskumníka, v rámci Týždna vedy a techniky a tiež v rôznych diskusných stretnutiach s odbornou a laickou verejnosťou. Ústav polymérov SAV bol zviditeľnený i vďaka Zlatej medaily SAV udelenej Ing. Jozefovi Rychlému DrSc., oceneniu Ing. Igorovi Lacíkovi, DrSc. a kolektívu Oddelenia pre výskum biomateriálov ÚPo SAV za vedecko-popularizačnú a vzdelávaciu činnosť, oceneniu prof. Ing. Chodákovi, DrSc. za propagáciu významu vedy a presadzovanie jej rozvoja ako i udeleniu Diplomu Zlatej Incheby Ing. Igorovi Novákovi, PhD. a Mgr. Zdenkovi Špitalskému, PhD. za vývoj superhydrofóbnych biodegradovateľných materiálov pre medicínske aplikácie. V spolupráci s chemickou firmou BASF Slovensko je ústav spolupropagátorom akcie Futur city http://chemgeneration.com/sk/futurecity.html), ktorej cieľom je stimulovať mladú generáciu k štúdiu chémie. Práca na téme liečby cukrovky je propagovaná cez neinvestičný fond Cukrovka n.f. (www.cukrovkanf.sk)

10. Činnosť knižnično-informačného pracoviska

10.1. Knižničný fond

Tabuľka 10a Knižničný fond

Knižničné jednotky spolu		**10 969**
z toho	knihy a zviazané periodiká	**10 823**
	audiovizuálne dokumenty	**0**
	elektronické dokumenty (vrátane digitálnych)	**0**
	mikroformy	**0**
	iné špeciálne dokumenty - dizertácie, výskumné správy	**146**
Počet titulov dochádzajúcich periodík		**3**
z toho zahraničné periodiká		**1**
Ročný prírastok knižničných jednotiek		**7**
v tom	kúpou	**7**
	darom	**0**
	výmenou	**0**
	bezodplatným prevodom	**0**
Úbytky knižničných jednotiek		**0**
Knižničné jednotky spracované automatizovane		**0**

10.2. Výpožičky a služby

Tabuľka 10b Výpožičky a služby

Výpožičky spolu		**550**
z toho	odborná literatúra pre dospelých	**512**
	výpožičky periodík	**35**
	prezenčné výpožičky	**3**
MVS iným knižniciam		**2**
MVS z iných knižníc		**0**
MMVS iným knižniciam		**0**
MMVS z iných knižníc		**0**
Počet vypracovaných bibliografií		**0**
Počet vypracovaných rešerší		**162**

10.3. Používatelia

Tabuľka 10c Užívatelia

Registrovaní používatelia	**55**
Návštevníci knižnice spolu (bez návštevníkov podujatí)	**73**

10.4. Iné údaje

Tabuľka 10d Iné údaje

On-line katalóg knižnice na internete (1=áno, 0=nie)	**0**
Náklady na nákup knižničného fondu v €	**1028.38**

10.5. Iné informácie o knižničnej činnosti

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11. Aktivity v orgánoch SAV

11.1. Členstvo vo Výbore Snemu SAV

11.2. Členstvo v Predsedníctve SAV a vo Vedeckej rade SAV

Ing. Mária Omastová, DrSc.

- členka Predsedníctva SAV, zástupkyňa Vedeckého sekretára
- členka Vedeckej rady SAV

11.3. Členstvo vo vedeckých kolégiách SAV

RNDr. Peter Cifra, DrSc.

- VK SAV pre chemické vedy (člen)

Ing. Igor Lacík, DrSc.

- VK SAV pre chemické vedy (člen)

Ing. Mária Omastová, DrSc.

- VK SAV pre chemické vedy (člen)

11.4. Členstvo v komisiách SAV

Prof. Ing. Tomáš Bleha, DrSc.

- Komisia SAV pre vyhodnocovanie medzinárodných projektov (člen)

Prof. Ing. Ivan Chodák, DrSc.

- Komisia SAV pre duševné vlastníctvo, inovácie a technologický transfer (člen)
- Rada programu centier excelentnosti SAV (člen)

Mgr. Jaroslav Mosnáček, PhD.

- Komisia SAV pre infraštruktúru a štrukturálne fondy (člen)

Ing. Mária Omastová, DrSc.

- Akreditačná komisia SAV (predsedníčka)
- Komisia SAV pre medzinárodnú vedecko-technickú spoluprácu (predsedníčka)

11.5. Členstvo v orgánoch VEGA

Mgr. Jaroslav Mosnáček, PhD.

- člen komisie VEGA č. 3 pre chemické vedy, chemické inžinierstvo a biotechnológie (člen)

Ing. Mária Omastová, DrSc.

- komisia VEGA č.3 pre chemické vedy, chemické inžinierstvo a biotechnológie (člen)

12. Hospodárenie organizácie

12.1. Výdavky PO SAV

Tabuľka 12a Výdavky PO SAV (v €)

V ý d a v k y	Skutočnosť k 31.12.2015 spolu	v tom:			
		zo ŠR od zriaďovateľa	z vlastných zdrojov	z iných zdrojov	z toho:
					ŠF EÚ
Výdavky spolu	2 301 151	1 195 304	968 609		
Bežné výdavky	2 163 913	1 165 404	998 509		
v tom:					
mzdy (610)	841 512	657 259	184 253		
poistné a príspevok do poisťovní (620)	295 237	228 693	66 544		
tovary a služby (630)	928 398	182 215	746 183		
z toho: časopisy					
VEGA projekty	112 780	112 780			
MVTS projekty	51 191	51 191			
CE					
vedecká výchova	98 766	97 237	1 529		
bežné transfery (640)	97 237	97 237			
z toho: štipendiá	93 126	91 597	1 529		
transfery partnerom projektov	110 726		110 726		
Kapitálové výdavky	137 238	64 635	72 603		
v tom:					
obstarávanie kapitálových aktív	72 603		72 603		
kapitálové transfery	64 635	64 635			
z toho: transfery partnerom projektov					

12.2. Príjmy PO SAV

Tabuľka 12b Príjmy PO SAV (v €)

P r í j m y	**Skutočnosť k 31.12.2015 spolu**	**v tom:**	
		rozpočtové	**z mimorozp. zdrojov**
Príjmy spolu	2 329 669	1 195 304	1 134 365
Nedaňové príjmy			
v tom:			
príjmy z prenájmu	28 809		28 809
príjmy z predaja výrobkov a služieb	272 689		272 689
iné	850		850
Granty a transfery (mimo zdroja 111)	830 017		830 017
v tom:			
tuzemské	389 333		389 333
z toho: APVV	344 759		344 759
iné	470 578		470 578
zahraničné	372 332		372 332
z toho: projekty rámcového programu EÚ			
iné	98 245		98 245

13. Nadácie a fondy pri organizácii SAV

Názov: Neinvestičný fond Cukrovka n.f. (www.cukrovkanf.sk)

Zameranie: Podpora výskumu spojeného s liečbou cukrovky transplantáciou pankreatických ostrovčekov

Opis: Neinvestičný fond Cukrovka n.f. s cieľom získať prostriedky najmä na:

- podporu výskumu a všetkých aktivít spojených s liečbou cukrovky transplantáciou pankreatických ostrovčekov, ktoré sú enkapsulované v polymérnej membráne,
- podporu vzdelávania a informovania verejnosti vo forme podávania informácií o nových trendoch v liečbe cukrovky,
- podporu študijných pobytov, školení, prednášok, konferencií,
- podporu tvorby prístrojovej infraštruktúry

14. Iné významné činnosti organizácie SAV

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15. Vyznamenania, ocenenia a ceny udelené pracovníkom organizácie v r. 2015

15.1. Domáce ocenenia

15.1.1. Ocenenia SAV

Chodák Ivan
Cena SAV za vedecko-popularizačnú a vzdelávaciu činnosť
Oceňovateľ: SAV
Opis: Cena SAV za vedecko-popularizačnú a vzdelávaciu činnosť, 29.06.2015, Smolenice – odovzdávanie najvýznamnejších vedeckých ocenení na Slovensku

Lacík Igor
Cena SAV za popularizáciu vedy
Oceňovateľ: SAV
Opis: Lacík Igor a kolektív Oddelenia pre výskum biomateriálov – Cena SAV za popularizáciu vedy, 29.06.2015, Smolenice – odovzdávanie najvýznamnejších vedeckých ocenení na Slovensku

Rychlý Jozef
Zlatá medaila SAV
Oceňovateľ: SAV
Opis: ocenenie, ktoré menovanému dňa 14.04.2015 udelilo P SAV za celoživotné vedecké dielo v oblasti vedy o polyméroch.

15.1.2. Iné domáce ocenenia

Novák Igor
diplom Zlatá Incheba
Oceňovateľ:
Opis: z výstavy SLOVMEDICA a NON-HANDICAP 2015 za exponát s názvom: Superhydrophobic biodegradable polymeric materials for medicinal applications.

Omastová Mária
medaila Daniela Belluša
Oceňovateľ: Slovenská chemická spoločnosť
Opis: udelená Slovenskou chemickou spoločnosťou

Špitálsky Zdenko
diplom Zlatá Incheba
Oceňovateľ:
Opis: z výstavy SLOVMEDICA a NON-HANDICAP 2015 za exponát s názvom: Superhydrophobic biodegradable polymeric materials for medicinal applications.

15.2. Medzinárodné ocenenia

16. Poskytovanie informácií v súlade so zákonom č. 211/2000 Z. z. o slobodnom prístupe k informáciám v znení neskorších predpisov (Zákon o slobode informácií)

Na pracovisku nebola zaznamenaná žiadna požiadavka o poskytnutie informácií v zmysle uvedeného zákona.

17. Problémy a podnety pre činnosť SAV

V r. 2015 pretrvávali nejasnosti ohľadne postupu transformácie SAV spojené aj s reštrukturalizáciou. S nástupom nového predsedníctva SAV na začiatku roka 2015 sa situácia zdala byť prehľadnejšia, avšak v priebehu roka a vyskytli prekážky, ktoré neumožnili urobiť legislatívne kroky k plánovanej transformácii inštitúcií SAV na verejno-výskumné inštitúcie od r. 2016. Vedenie ústavu podporuje transformáciu a veríme, že sa ju podarí uskutočniť v priebehu roka 2016. Za posledné roky sa nám podarilo vytvoriť pomerne kvalitné podmienky z pohľadu infraštruktúry, avšak rozvoj ústavu (a SAV), ďalšie financovanie, kvalita projektov a kvalita výstupov je kriticky podmienená kvalitou ľudských zdrojov. Veríme, že jednou zo základných naplnených priorít bude vytvorenie podmienok pre podporu a udržanie mladej generácie kvalitných vedeckých pracovníkov pre budúcnosť SAV. Pozitívnym znakom je i to, že po úspešnom prvom kole, Ústav polymérov bol úspešný i v druhom a treťom kole výzvy SASPRO, ktorá je čiastočne financovaná z Európskej únie a je zameraná na podporu výskumu kvalitných mladých vedeckých pracovníkov na slovenských vedeckých inštitúciách.

Správu o činnosti organizácie SAV spracoval(i):

Ing. Katarína Csomorová, 02/ 3229 4307
Ing. Zuzana Hloušková, 02/ 3229 4328
Ing. Angela Kleinová, 02/ 3229 4368
Mgr. Monika Majerčíková, 02/ 3229 4319
Ing. Mária Omastová, DrSc., 02/ 3229 4312
Ing. Nadežda Petrenčíková, 02/ 3229 4371
Mgr. Zdenko Špitálsky, PhD., 02/ 3229 4325

Riaditeľ organizácie SAV	**Predseda vedeckej rady**
.....	.....
Ing. Igor Lacík, DrSc.	RNDr. Peter Cifra, DrSc.

Príloha A

Zoznam zamestnancov a doktorandov organizácie k 31.12.2015

Zoznam zamestnancov podľa štruktúry (nadväzne na údaje v Tabuľke 1a)

	Meno s titulmi	Úväzok (v %)	Ročný prepočítaný úväzok
Vedúci vedeckí pracovníci DrSc.			
1.	Ing. Josef Bartoš, DrSc.	100	1.00
2.	Prof., RNDr. Ignác Capek, DrSc.	90	0.90
3.	RNDr. Peter Cifra, DrSc.	100	1.00
4.	Štefan Chmela, DrSc.	100	1.00
5.	Prof. Ing. Ivan Chodák, DrSc.	100	1.00
6.	Ing. Igor Lacík, DrSc.	100	1.00
7.	Ing. Mária Omastová, DrSc.	50	0.54
8.	Ing. Jozef Rychlý, DrSc.	40	0.40
Samostatní vedeckí pracovníci			
1.	Mgr. Zuzana Benková, PhD.	100	1.00
2.	Mgr. Martin Danko, PhD.	100	1.00
3.	RNDr. Dušan Chorvát, PhD.	20	0.17
4.	Ing. Ivica Janigová, PhD.	100	1.00
5.	Mgr. Jozef Kollár, PhD.	100	1.00
6.	Mgr. Juraj Kronek, PhD.	100	1.00
7.	Ing. Matej Mičušík, PhD.	100	1.00
8.	Mgr. Jaroslav Mosnáček, PhD.	100	1.00
9.	Ing. Igor Novák, PhD.	100	1.00
10.	Ing. Dušan Račko, PhD.	100	0.00
11.	Ing. Filip Rázga, PhD.	110	1.08
12.	Mgr. Zdenko Špitálsky, PhD.	100	1.00
Vedeckí pracovníci			
1.	Ing. Katarína Borská, PhD.	100	1.00
2.	Ing. Klaudia Czaniková, PhD.	100	1.00
3.	Ing. Anita Eckstein, PhD.	100	0.00
4.	Ing. Gabriela Hloušková, PhD.	100	0.00
5.	Ing. Markéta Ilčíková, PhD.	100	0.38
6.	Ing. Daniela Jochec Mošková, PhD.	80	0.80
7.	Ing. Lucia Kleščíková, PhD.	100	0.33
8.	Mgr. Zuzana Kroneková, PhD.	100	1.00
9.	Ing. Miroslava Lukešová, PhD.	100	0.40
10.	Ing. Marta Malíková, PhD.	50	0.50
11.	Mgr. Zoran Markovic, PhD.	100	0.08
12.	Ing. Andrea Mihálová, PhD.	70	0.23

13.	Ing. Daniela Moravčíková, PhD.	100	1.00
14.	Mgr. Katarína Mosnáčková, PhD.	100	0.96
15.	Mgr. Silvia Podhradská, PhD.	100	1.00
16.	Ing. Michaela Sedničková, PhD.	100	1.00
17.	Ing. Alena Šišková, PhD.	100	1.00
18.	Ing. Helena Švajdlenková, PhD.	100	0.75
19.	Ing. Dušana Treľová, PhD.	100	1.00
20.	Ing. Lucia Uhelská, PhD.	100	1.00
21.	Ing. Marian Valentin, PhD.	10	0.70
22.	Ing. Ondrej Žigo, PhD.	100	1.00
Odborní pracovníci s VŠ vzdelaním			
1.	Mgr. Rastislav Baran	50	0.33
2.	Ing. Nikola Bugárová	10	0.03
3.	Ing. Zuzana Cseriová	100	0.17
4.	Ing. Katarína Csomorová	100	1.00
5.	Ing. Eliška Číková	10	0.10
////6.	RNDr. Agnesa Fiedlerová	100	1.00
7.	Ing. Dominika Hlásna	100	0.08
8.	Ing. Zuzana Hloušková	100	1.00
9.	Ing. Ana Hološ	100	0.16
10.	Ing. Ľudmila Hrčková	100	1.00
11.	Ing. Anna Chovancová	10	0.10
12.	Ing. František Ivanič	10	0.03
13.	Ing. Angela Kleinová	100	1.00
14.	Mgr. Igor Koreň	20	0.20
15.	Ing. Jaroslav Kuliček	20	0.20
16.	Ing. Eva Macová	100	1.00
17.	Mgr. Monika Majerčíková	100	1.00
18.	Mgr. Petra Mazancová	10	0.03
19.	Mgr. Veronika Némethová	10	0.10
20.	Ing. Zuzana Nógellová	100	1.00
21.	Ing. Nadežda Petrenčíková	100	1.00
22.	Mgr. Jozef Prachár	10	0.10
23.	RNDr. Michal Procházka	100	0.33
24.	Ing. Mária Šivová	100	1.00
25.	Mgr. Petra Šrámková	10	0.10
26.	Mgr. Anna Zahoranová	10	0.10
Odborní pracovníci ÚSV			
1.	Katarína Cinová	100	1.00
2.	Nadežda Danková	100	1.00
3.	Eva Hipká	100	1.00

4.	Ivona Hrodeková	100	1.00
5.	Sidónia Kalinová	100	1.00
6.	Jozef Kandráč	80	0.80
7.	Viera Karlíková	100	1.00
8.	Marcela Kimličková	100	1.00
9.	Zuzana Kuželová	100	1.00
10.	Marta Mitošinková	100	1.00
11.	Iveta Nestarcová	100	1.00
Ostatní pracovníci			
1.	Peter Kečkéš	40	0.40
2.	Apostol Todorov Nedelčev	40	0.40
3.	Zuzana Ondrušová	100	1.00
4.	Daniela Pírová	100	1.00

Zoznam zamestnancov, ktorí odišli v priebehu roka

	Meno s titulmi	**Dátum odchodu**	**Ročný prepočítaný úväzok**
Samostatní vedeckí pracovníci			
1.	RNDr. Dušan Chorvát, PhD.	31.12.2015	-
2.	Mgr. Peter Kasák, PhD.	30.11.2015	0.00
3.	Ing. Igor Krupa, PhD.	31.8.2015	0.00
Vedeckí pracovníci			
1.	Mgr. Peter Palenčár, PhD.	31.8.2015	0.04
Odborní pracovníci s VŠ vzdelaním			
1.	Ing. Slávka Ďurkáčová	31.10.2015	0.08
2.	Ing. Martina Hudáková	30.9.2015	0.07
3.	Mgr. Pavol Námer	30.6.2015	0.05
4.	Ing. Szabolcs Szalai	31.5.2015	0.04
5.	Ing. Jana Tabačiarová	17.8.2015	0.06
6.	Ing. Dominika Vnuková	31.8.2015	0.06
Odborní pracovníci ÚSV			
1.	Alena Ďurišová	31.5.2015	0.42

Zoznam doktorandov

	Meno s titulmi	Škola/fakulta	Študijný odbor
Interní doktorandi hradení z prostriedkov SAV			
1.	Ing. Nikola Bugárová	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
2.	Ing. Eliška Číková	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
3.	Ing. Anna Chovancová	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
4.	Ing. František Ivanič	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
5.	Ing. Jaroslav Kuliček	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
6.	Mgr. Petra Mazancová	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
7.	Mgr. Pavol Námer	Fakulta chemickej a potravinárskej technológie STU	4.1.18 fyzikálna chémia
8.	Ing. Veronika Némethová	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
9.	Mgr. Jozef Prachár	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
10.	Ing. Szabolcs Szalai	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
11.	Mgr. Petra Šrámková	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
12.	Mgr. Anna Zahoranová	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia
Interní doktorandi hradení z iných zdrojov			
organizácia nemá interných doktorandov hradených z iných zdrojov			
Externí doktorandi			
1.	Ing. Martina Hudáková	Fakulta chemickej a potravinárskej technológie STU	4.1.19 makromolekulová chémia

Príloha B

Medzinárodné projekty

Programy: Medziakademická dohoda (MAD)

1. Štúdium povrchových vlastností vybraných funkcionalizovaných polyolefínov.
(Study of surface properties of selected functionalized polyolefins.)

Zodpovedný riešiteľ:	Igor Novák
Trvanie projektu:	1.1.2014 / 31.12.2018
Evidenčné číslo projektu:	-
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Česko: 1
Čerpané financie:	

Dosiahnuté výsledky:

V roku 2015 boli skúmané povrchové a adhézne vlastnosti vybraných polyolefínov (LDPE, HDPE, iPP) funkcionalizovaných maleínanhydridom, kyselinou akrylovou a kyselinou itakonovou. Povrchové vlastnosti pripravených funkcionalizovaných polyolefínov boli analyzované meraním kontaktných uhlov sady testovacích kvapalín s rôznou polaritou a tiež meraním parametrov visiacej kvapky polymérov v tavenine. Najvyšší rast hydrofilnosti bol v prípade LDPE a iPP dosiahnutý v prípade funkcionalizácie kyselinou itakonovou, ktorá poskytla aj adhézne spoje s najvyššou pevnosťou.

2.) Príprava a elektrické vlastnosti vodivých polymérnych kompozitov a nanokompozitov.
(Preparation and electrical properties of conducting polymer composites and nanocomposites.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.1.2012 / 31.12.2016
Evidenčné číslo projektu:	-
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Česko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Polymérne nanokompozity a hybridy sa pripravili modifikáciou mnohostenných uhlíkových nanotrubičiek (MWCNT) použitím chemickej oxidačnej polymerizácie pyrolu a anilínu. Pripravené hybridy sa testovali ako protielektródy v solárnych článkoch. Hybridné materiály s obsahom polypyrolu (PPy) 70 hm. % dosiahli veľmi dobré výsledky pri testovaní vo farbivom senzitizovaných solárnych článkoch. MWCNT pokryté polyanilínom sa testujú podobne ako protielektródy v solárnych článkoch.

Výstupy:

1. OMASTOVÁ, Mária - KULIČEK, Jaroslav - STEJSKAL, J. - OKSUZ, A. U. Conducting composites with polypyrrole and their application. In Danube Vltava Sava Polymer Meeting : DVSPM 2015 : proceedings of a conference on polymer science. - Linz, Austria : Trauner Verlag Univesitat, 2015, p. 19. ISBN 978-3-99033-491-1

3.) Charakterizácia chromatograficky zložitých polymérov pokročilými metódami kvapalinovej chromatografie: MD-SEC a LC LCD.
(Characterization of chromatographically-complex polymers by advanced liquid chromatography methods: MD-SEC and LC LCD.)

Zodpovedný riešiteľ:	Alena Šišková
Trvanie projektu:	1.1.2013 / 30.6.2015
Evidenčné číslo projektu:	MAD
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Argentína: 1
Čerpané financie:	

Dosiahnuté výsledky:

V roku 2015 bola testovaná metóda na spracovávanie dát a analýzu frakcií získaných pomocou dvoj-dimenzionálnej kvapalinovej chromatografie. Overoval sa matematický model predikcie molekulovej štruktúry vzoriek navrhnutého v Santa Fe. Model rieši automatickú korekciu rozširovania píkov z kvapalinovej chromatografie pri limitných podmienkach desorpcie a tiež synchronizáciu medzi prvou a druhou dimenziou pri charakterizácii viaczložkových polymérnych systémov.

Výstupy:

1. ŠIŠKOVÁ, Alena - CLEMENTI, L. - VEGA, J. - MEIRA, G. – BEREK, Dušan. Sequenced two-dimensional liquid chromatography of polymer blends. Source of errors in the data treatment procedure. XI Simposio Argentino de Polímeros – SAP 2015, 20 – 23 october 2015, Santa Fe – Argentina. Web page: http://www.unl.edu.ar/sap2015/. Výveska
2. CLEMENTI, L. - VEGA, J. - ŠIŠKOVÁ, Alena - MEIRA, G. – BEREK, Dušan. Sequenced Two-Dimensional Liquid Chromatography: Molar mass distributions in a binary polymer blend, 21st International Symposium on Separation Sciences, June 30- July 3, 2015, Ljubljana, Slovenia. Výveska

Programy: COST

4.) Dlhodobo udržateľné retardanty horenia pre textil a príbuzné materiály na báze nanočastíc nahradzujúcich konvenčné chemické látky.
(Sustainable flame retardancy for textiles and related materials based on nanoparticles substituting conventional chemicals.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.5.2012 / 31.5.2016
Evidenčné číslo projektu:	MP1105
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Centre for Materials Science and Engineering (CSME), University Gent, Gent, Belgium
Počet spoluriešiteľských inštitúcií:	19 - Fínsko: 2, Francúzsko: 2, Veľká Británia: 3, Taliansko: 3, Litva: 3, Poľsko: 2, Portugalsko: 4
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4000 €

Dosiahnuté výsledky:

V ďalších krokoch projektu boli textílie stabilizované proti horľavosti vo firme Inotex nimi

vyvinutou emulziou na báze "zelených retardérov" teda bez prítomnosti zlúčenín brómu. Výsledky experimentov, ktoré sa uskutočnili na Ústave polymérov v kónickom kalorimetri ukázali, že parametre ako čas do vznietenia, rýchlosť uvoľňovania tepla, celková spotreba kyslíka a pod. boli výrazne znížené, teda horľavosť materiálu bola potlačená, bavlna nezahorela vôbec. Súčasne bola na Ústave experimentálnej botaniky ČAV testovaná ekotoxicita týchto retardérov. Ďalším krokom bude aplikácia vodivej povrchovej vrstvy na textílie súčasne s protihorľavostnou vrstvou a následne sa bude testovať termostabilita a horľavosť na našom pracovisku.

Výstupy:

1. MALÍKOVÁ, Marta - CSOMOROVÁ, Katarína - ŠESTÁK, J.- OMASTOVÁ, Mária. Thermal stability and flammability of smart textiles based on expanded graphite-polymeric nanocomposites. In Eurofillers Polymer Blend 2015 : Montpellier, France, April 26th - 30th, 2015 : book of abstracts. - Montpellier, France : Universite Montpellier, 2015, non p., P5.8.
2. MALÍKOVÁ, Marta - ŠPITALSKÝ, Zdenko - ŠESTÁK, J. - OMASTOVÁ, Mária. Conductivity and flammability of smart textiles based on expanded graphite-polymeric nanocomposites. In EUPOC 2015 : Conducting Polymeric Materials : Gargnano, Italy, 24 - 28 May 2015 : abstract booklet & list of participants. - Pisa, Italy : University of Pisa, 2015, p. 15.

5.) Nové materiály a zariadenia na báze vodivých polymérov a ich kompozitov – Etapa 2. *(New materials and devices based on conducting polymers and their composites.)*

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.9.2015 / 31.1.2016
Evidenčné číslo projektu:	MVTS - COST Polycon01DS15015
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Brandenburg University of Technology Cottbus–Senftenberg
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 465 €

Dosiahnuté výsledky:

Počas septembra a októbra doktorand J. Kulíček bol na pracovnom pobyte v Nemecku v Senftenbergu na Fakulte vied, BUT, v rámci projektu Danube network. Pokračoval s prípravou elektród, na ktoré sa nanášala iónová kvapalina s obsahom kovových nanočastíc, a na nanášanie nanokoloidu na elektródu použil aj metódu Surface Plasmon Resonance. Pripravené elektródy sa testovali ako senzory.

Výstupy:

1. KULIČEK, Jaroslav - MIČUŠÍK, Matej - SCHERBAHN, V. - MIRSKÝ, V. M. - OMASTOVÁ, Mária. Electrodes decorated by metal nanoparticles for sensing application. In ChemZi : slovenský časopis o chémii pre chemické vzdelávanie, výskum a priemysel : 67. Zjazd chemikov : Horný Smokovec, 7.- 11. september 2015. - Bratislava : Slovenská chemická spoločnosť, 2015, 2015, roč.11, č. 1, s. 84. ISSN 1336-7242.

6.) Stabilizovaná fotovoltaika ďalšej generácie: objasnenie mechanizmov degradácie organických solárnych článkov komplementárnymi charakterizačnými technikami StableNextSol). *(Stable Next-Generation Photovoltaics: Unraveling degradation mechanisms of Organic Solar Cells by complementary characterization techniques (StableNextSol).)*

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.2.2015 / 31.3.2018
Evidenčné číslo projektu:	MVTS - COST MP 1307

Organizácia je koordinátorom projektu:	nie
Koordinátor:	Fundaci Institut Catal De Nanocicia I Nanotecnologia, Barcelona
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 3666 €

Dosiahnuté výsledky:

Na Ústave polymérov SAV (UPo SAV) v Bratislave sa zaoberáme prípravou elektricky vodivých kompozitných materiálov na báze uhlíkových nanočastíc a vodivých polymérov, predovšetkým polypyrolu a polytiofénu, ktoré sú na spolupracujúcich ústavoch použité ako elektródy v solárnych článkov. Dlhodobé skúsenosti tímu z UPo SAV sú aj v oblasti charakterizácie povrchov materiálov pomocou rontgenovej fotoelektrónovej spektroskopie (XPS), ktoré využívajú pre riešenie cieľov projektu, ako je pochopenie mechanizmu degradácie organických solárnych článkov.

7.) Inovatívne aplikácie vlákien z regenerovanej celulózy.
(Innovative application of regenerated wood cellulose fibers.)

Zodpovedný riešiteľ:	Alena Šišková
Trvanie projektu:	1.5.2013 / 31.5.2017
Evidenčné číslo projektu:	MVTS - COST MP 1205
Organizácia je koordinátorom projektu:	nie
Koordinátor:	SP Wood Technology Sweden
Počet spoluriešiteľských inštitúcií:	1 - Švédsko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4000 €

Dosiahnuté výsledky:

V hodnotenom období sa optimalizovala príprava alkylovaného pesticídu 4-amino-6-tert-butyl-3-methylsulfanyl-1,2,4-triazin-5-one a optimalizovali sa podmienky modifikácie vlákenných vrstiev z vodného roztoku PVA, pripravených pomocou elektrostatického zvlákňovania a tiež filmy z mikrokryštalickej celulózy pripravené rozpúšťaním celulózy v iónovej kvapaline, vylievaním a následnou koaguláciou počas premývania destilovanou vodou. Vlákenné vrstvy a filmy boli povrchovo modifikované pomocou „click“ reakcie. Výsledky FTIR a DSC preukázali úspešnú povrchovú modifikáciu PVA a celulózy.

Výstupy:

1. ŠIŠKOVÁ, Alena - DUBAJ, T.- KLEINOVÁ, Angela - ECKSTEIN ANDICSOVÁ, Anita. Modification of cellulose films for controlled release system with potential use in agriculture. In Advances in cellulose processing and applications - research goes to industry: COST FP1205 Joint Working Groups and Management Committee Meetings: Iasi, Romania, March 10-11, 2015: program and book of abstracts. - Iasi, Romania: Editura Tehnopress, 2015, p. 60. ISBN 978-606-687-185-3.

Programy: 7RP

8.) Molekulové a atomické próbovanie série elastomérov v relácii k relaxačnej dynamike zo širokopásmovej dielektrickej spektroskopie.
(Molecular and atomic probing a series of elastomers in relation to relaxation dynamics from broadband dielectric spectroscopy.)

Zodpovedný riešiteľ:	Josef Bartoš
Trvanie projektu:	1.1.2015 / 31.12.2015
Evidenčné číslo projektu:	FP7 of EU – ESMI E150100651, MVTS No. E13010033
Organizácia je koordinátorom projektu:	nie
Koordinátor:	CFM - UPV/EHU San Sebastian
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4000 €

Dosiahnuté výsledky:

V rámci ESMI 2015 projektu na CFM UPV/EHU, San Sebastian, Španielsko sa finalizovali detailné BDS merania a analýza dielektrických spektier 1,2- a 1,4-poly(butadién)ov (1,2-PBD a 1,4-PBD) s cieľom identifikácie relevantného pohybového módu, ktorý spôsobuje prechod spinovej sondy TEMPO z pomalého do rýchleho režimu pri T50G. Zistilo sa, že tento základný prechod v 1,4-PBD s T50G > Tg súvisí s nástupom primárnej alfa relaxácie, zatiaľčo v prípade 1,2-PBD s T50G < Tg je kontrolovaný sekundárnou beta relaxáciou 2) pokračovanie v systematickom merania dynamických vlastností hydrogenizovaného a deuterovaného poly(dimetylsiloxán)u (PDMS) so zámerom ich ďaľšieho využitia pri interpretácii ESR dát spinovej sondy TEMPO v bulk stave s výhľadom ich štúdia v uväznenom stave vo vhodne zvolenej rigidnej matrici.

Programy: Multilaterálne - iné

9.) Molekulovo-dynamické štúdium zmáčavosti silikátového povrchu pokrytého polymérmi.
(Molecular simulation study of the wetting behaviour of polymer grafted silica surface.)

Zodpovedný riešiteľ:	Zuzana Benková
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	INT/PORTUGAL/P-05/2013
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Katedra chémie a biochémie Fakulta prírodných vied Univerzita v Porte
Počet spoluriešiteľských inštitúcií:	1 - India: 1
Čerpané financie:	

Dosiahnuté výsledky:

Hydrofilicita/hydrofobicita bola kvantifikovaná pomocou kontaktného uhla vodnej kvapky na povrchu PNIPAAm vrstvy. Boli stanovené zmeny štruktúrnych, dynamických a termodynamických vlastností, ktoré sprevádzali kolaps PNIPAAm reťazcov dôsledkom zvyšovania teploty.

Výstupy:

1. BHANDARY, D. - BENKOVÁ, Zuzana - CORDEIRO, M. N. D. S. - SINGH, J. K. Molecular dynamics study of wetting behavior of grafted thermo-responsive PNIPAAm. odoslané do Soft Matter, ID: SM-ART-10-2015-002684, IF = 4.151

2. BHANDARY, D. - BENKOVÁ, Zuzana - CORDEIRO, M. N. D. S. - SINGH, J. K. Wetting on grafted thermo-responsive polymer brushes: a molecular dynamics study, In Book of Abstracts of Thermodynamics 2015, 15. 9.-18. 9. 2015, Copenhagen, Dánsko, p. 61.

10.) Stanovenie rýchlostných konštánt a modelovanie súčasných a v budúcnosti študovaných polymerizačných procesov a systémov v BASF.
(Kinetic coefficients and models for existing and future polymerization processes and systems at BASF.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.9.2015 / 31.8.2018
Evidenčné číslo projektu:	projekt BASF AG, Ludwigshafen, Nemecko
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Nemecko: 1
Čerpané financie:	

Dosiahnuté výsledky:
Opísaná kinetika a mechanizmus polymerizácie akrylamidu, kyseliny akrylovej, zwiteriónových monomérov vo vodnom prostredí. Nastavenie podmienok pulznej laserovej polymerizácie a gélovej permeačnej chromatografie.

Výstupy:

1. DRAWE, P. - BUBACK, M. - LACÍK, Igor. Radical polymerization of alkali acrylates in aqueous solution. In Macromolecular Chemistry and Physics, 2015, vol. 216, p. 1333-1340. (2.616 - IF2014). ISSN 1022-1352.
2. LACÍK, Igor - *STACH, Marek - KASÁK, Peter* - SEMAK, V. - UHELSKÁ, Lucia - CHOVANCOVÁ, Anna - REINHOLD, G. - KILZ, P. - DELAITTRE, G. - CHARLEUX, B. - CHADUC, I. - D´AGOSTO, F. -LANSALOT, M. - GABORIEAU, M. - CASTIGNOLLES, P. - GILBERT, R. G. - SZABLAN, Z. - BARNER-KOWOLLIK, Ch. - HESSE, P. - BUBACK, M. SEC analysis of poly(acrylic acid) andpoly(methacrylic acid). In Macromolecular Chemistry and Physics, 2015, vol. 216, p. 23-37. (2.616 - IF2014). ISSN1022-1352, Podiel: 0,2 (F).
3. WITTENBERG, N. F. G. - PREUSSER, C. - KATTNER, H. - *STACH, Marek* - LACÍK, Igor - HUTCHINSON, R. A. - BUBACK M. Modelling acrylic acid radical polymerization in aqueous solution. Macromol. React. Eng.,2015, early view, DOI: 10.1002/mren.201500017
4. PREUSSER, C. - CHOVANCOVÁ, Anna - LACÍK, Igor - HUTCHINSON, R. A. Modeling the radical batch homopolymerization of acrylamide in aqueous solution. Macromol. React. Eng., odoslané dec 2015

11.) The Chicago Diabetes Project: Globálna spolupráca pre funkčnú liečbu cukrovky.
(The Chicago Diabetes Project: Global collaboration for a functional cure.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.5.2007 /
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	University of Illinois, Chicago
Počet spoluriešiteľských inštitúcií:	5 - Austrália: 1, Švajčiarsko: 1, Taliansko: 1, Nórsko: 1, USA: 1
Čerpané financie:	

Dosiahnuté výsledky:

Nový proces pripravy mikrokapsúl, vývoj nových metodík pre charakterizáciu mikrokapsúl.

Výstupy:

1. VEISEH, O. - DOLOFF, J. C. - MA, M. - VEGAS, A. J. - TAM, H. H. - BADER, A. R. - LI, J. - LANGAN, E. - WYCKOFF, J. - LOO, W. S. - JHUNJHUNWALA, S. - CHIU, A. - SIEBERT, S. - TANG, K. - HOLLISTER-LOCK, J. - ARESTA-DASILVA, S. - BOCHENEK, Matthew - MENDOZAELIAS, J. - WANG, Y. - QI, M. - LAVIN, D. M. - CHEN, M. - DHOLAKIA, N. - THAKRAR, R. - LACÍK, Igor - WEIR, G. C. - OBERHOLZER, J. - GREINER, D. L. - LANGER, R. - ANDERSON, D. G. Size- and shape-dependent foreign body immune response to materials implanted in rodents and non-human primates. In Nature Materials, 2015, vol. 14, p. 643-651. (36.503 - IF2014). ISSN 1476-1122.
2. NÉMETHOVÁ, Veronika - LACÍK, Igor - RÁZGA, Filip. Vibration technology for micro-encapsulation: The restrictive role of viscosity. In Journal of Bioprocessing and Biotechniques : an open access journal, 2015, vol. 5, iss. 1, art.no. 1000199. (2015 - Scopus). ISSN 2155-9821.

12.) Určenie rýchlostných konštánt radikálovej polymerizácie vodorozpustných monomérov so špeciálnym dôrazom na nabité a ionizovateľné monoméry.
(Determination of rate coefficients of water-soluble monomers with special emphasis on charged/ionizable monomers)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.6.2004 / 31.5.2015
Evidenčné číslo projektu:	projekt BASF AG, Ludwigshafen, Nemecko
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	2 - Kanada: 1, Nemecko: 1
Čerpané financie:	mobilita

Dosiahnuté výsledky:

13.) Nano-vlákna pripravené elektrostatickým zvlákňovaním pre pre bio-inšpirované kompozitné materiály a ich inovatívne priemyselné aplikácie.
(Electrospun nano-fibres for bio-inspired composite materials and innovative industrial applications.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.5.2012 / 31.5.2017
Evidenčné číslo projektu:	MVTS - COST MP 1206
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Kemyk, 7000 Eisenstadt
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4000 €

Dosiahnuté výsledky:

Na pracovisku sa elektrostaticky zvlákňoval polykaprolaktón (PCL). Príprava bola zameraná na sledovanie rôznych vplyvov na pripravené netkané textílie ako napr. vplyv použitého rozpúšťadla, koncentrácie roztoku, napätia, atď. Následne sa tieto vzorky pokrývali vodivým

polymérom polypyrolom. Pri takejto povrchovej úprave sa venuje zvýšená pozornosť a snaha o kompletné obalenie jednotlivých vlákien a zároveň odolnosti vrstvy voči oderu. Preto sa pri príprave použili rôzne spôsoby a výsledná morfológia vlákna bola vyhodnotená pomocou SEM analýzy. Pre charakterizáciu sa využilo aj XPS, DMA, meranie kontaktného uhla a pod.

Výstupy:

1. ČÍKOVÁ, Eliška - ŠIŠKOVÁ, Alena - OPÁLEK, A. - OMASTOVÁ, Mária. Electronspun poly(e-caprolactone) fibers: Effects of processing on fiber morphology. In Applications of Electrospinning in Composites, Nanofabrication, Food, Packaging, Pharma and Controlled Release : COST MP1206 Electrospinning : Novi Sad, Serbia, 25th-27th March 2015 : program and book of abstracts. - Novi Sad, Serbia : Tehnološki fakultet, 2015, p. 81. ISBN 978-86-6253-043-1.
2. ČÍKOVÁ, Eliška - MIČUŠÍK, Matej - ŠIŠKOVÁ, Alena - OMASTOVÁ, Mária. Conducting electrospun polycaprolactone/polypyrrole fibers. In EUPOC 2015 : Conducting Polymeric Materials : Gargnano, Italy, 24 - 28 May 2015 : abstract booklet & list of participants. - Pisa, Italy : University of Pisa, 2015, p. 49.

Programy: Bilaterálne - iné

14.) Charakterizácia uväznených organických systémov pomocou externých prób.

(External probe characterization of the confined organics.)

Zodpovedný riešiteľ:	Josef Bartoš
Trvanie projektu:	1.1.2014 / 31.12.2015
Evidenčné číslo projektu:	DAAD-SAV 2014
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Experimental Physik V, CEKM, Universität Augsburg, Nemecko
Počet spoluriešiteľských inštitúcií:	1 - Nemecko: 1
Čerpané financie:	

Dosiahnuté výsledky:

V rámci DAAD 2015 grantu sa dokončilo v systematickom vyšetrovaní dvoch organických médií tj. nepolárnom n-hexadekáne (n-HXD) a polárnom 1-propanole (1-PrOH) v objemovom (bulk) stave ako aj priestorovo-limitovaných (uväznených) stavoch série silikagélov s rôznou veľkosťou pórov pomocou ESR a DSC techník. Spektrálne a dynamické parametre spinovej sondy TEMPO v obidvoch stavoch vyšetrovaných médií sa porovnali s makroskopickými termodynamickými charakteristikami týchto systémov. Zistilo sa, že dynamika TEMPA v nepolárnom n-HXD je veľmi silne spomalená po jeho priestorovom obmedzení oproti polárnemu 1-PrOH, avšak relatívna citlivosť k veľkosti pórov vykazuje opačný trend. Na základe komplexnej analýzy ESR a DSC dát v spojení s ďalšími relevantnými experimentálnymi a teoretickými informáciami z literatúry sa uzavrelo, že toto spomalenie v n-HXD súvisí so preferenčnou interakciou polárnej spinovej sondy TEMPO so silanolovými skupinami SG matríc.Tento záver je podporený pomocou polárneho 1-PrOH s vyššou afinitiou k povrchu SG matríc v porovnaní s nepolárnym n-HXD.

Výstupy:

1. LUKEŠOVÁ, Miroslava - ZGARDZINSKA, B. - ŠVAJDLENKOVÁ, Helena - ZALESKI, R. - CHARMAS, B. - BARTOŠ, Josef. Spin probe dynamics in relation to free volume in crystalline organics from ESR and PALS: N-tridecane. In Physica B: Condensed Matter, 2015, vol. 476, p. 100-108. (1.319 - IF2014). ISSN 0921-4526

2. LUKEŠOVÁ, Miroslava - ŠVAJDLENKOVÁ,Helena - SIPPEL, P. - REUTER, D. - MACOVÁ, Eva - BEREK, Dušan - ZALESKI, R. - EDELMANN, M. - LOIDL, A. - BARTOŠ, Josef. Spin probe dynamics of n-hexadecane and n-propanol in bulk and confined geometry. In XXVI.International EPR Seminar 2015, Graz University of Technology, Graz, June 8.-10.2015. Prednáška-O/P 36

15.) Molekulovo-dynamické simulácie PEO-modifikovaných povrchov ponorených v matrici homopolymérnych tavenín alebo roztokov.
(Molecular dynamics simulations of PEO-modified surfaces immersed in a matrix of homopolymer melts or solutions.)

Zodpovedný riešiteľ:	Zuzana Benková
Trvanie projektu:	1.4.2013 / 31.12.2020
Evidenčné číslo projektu:	SFRH/BPD/90265/2012
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Katedra chémie a biochémie Fakulta prírodných vied Univerzita v Porte
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	

Dosiahnuté výsledky:

K vypudzovaniu voľných PEO reťazcov prítomných v kondenzovanej fáze z PEO modifikovaných povrchov dochádza pri povrchových hustotách naviazaných PEO reťazcov ~3.5 nm–2, čo je hustota zatiaľ experimentálne nedosiahnuteľná. Z toho vyplýva, že dva povrchy ireverzibilne pokryté PEO reťazcami sa budú v prítomnosti voľných približne rovnako dlhých PEO reťacov odpudzovať.

Výstupy:

1. BENKOVÁ, Zuzana - CORDEIRO, M. N. D. S. Molecular dynamics simulations of poly(ethylene oxide) grafted onto silica immersed in melt of homopolymers. In Langmuir, 2015, vol. 31, p. 10254-10264, (4.457 – IF 2014)
2. BENKOVÁ, Zuzana - CORDEIRO, M. N. D. S. Molecular dynamics simulations of poly(ethylene oxide) grafted onto silica immersed in melt of homopolymers. In Book of Abstracts of CCP5 Annual Meeting 2015, 6. 9.-9. 9. 2015, Lancaster, UK, p. 9.

16.) Teoretické a experimentálne štúdium polymérnych vrstiev zakotvených na povrchoch ako ochrana proti adsorpcii proteínov.
(Theoretical and experimental study of polymer layers confined on surfaces as a protection against polymer adsorbtion.)

Zodpovedný riešiteľ:	Zuzana Benková
Trvanie projektu:	1.4.2013 / 30.4.2015
Evidenčné číslo projektu:	SK-PT-0015-12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	

Dosiahnuté výsledky:

17.) (Ko)-polymerizácia s otvorením kruhu butyrolaktónových monomérov.
(Ring-opening (co)-polymerization of butyrolactone based monomers.)

Zodpovedný riešiteľ:	Martin Danko
Trvanie projektu:	1.1.2013 / 31.12.2015
Evidenčné číslo projektu:	bilaterálny slovensko-poľský
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Poľsko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Pokračovali experimenty kopolymerizácie päťčlánkového laktónu alfa-metylén-gama-butyrolaktónu (MBL, Tulipalín A) s epsilon-kaprolaktónom v podmienkach ROP iniciáciou AlIII(OiPr)3. Štúdie ROP pri rôznych pomeroch monomérov potvrdili vznik polyméru s Mn = 4 000-42 000 g mol-1 v závislosti na pomere monomér/iniciátor a s pomerne nízkym koeficientom disperzity (? = 1.15-1.30), pričom obsah MBL v kopolyméri bol 4-17%. Najväčší obsah MBL v kopolyméri bol v násadách s vyšším pomerom MBL/CL. Pri vyššom podiely CL bol obsah MBL vo výslednom kopolyméri max. 6 %. V polymerizačnej zmesi po rýchlej polymerizácii CL zostatkový MBL s aktívnym MBL* koncom prakticky nepolymerizuje. Naopak pri vysokom pomere MBL/CL je polymerizácia pomalá, ale aktívny CL* koniec má vyššiu pravdepodobnosť reagovať s MBL monomérom. Zvýšením teploty (130°C) a/alebo zmenou rozpúšťadla (THF za toluén) bol okrem ko-polyesterov pozorovaný vznik akrylátového homopolyméru PMBL (obyčajne okolo 5%), ktorý bol pomocou TEMPO lapača radikálov minimalizovaný, čím sa potvrdil radikálový mechanizmus jeho vzniku.

Výstupy:

1. ĎURKÁČOVÁ, Slávka - DANKO, Martin - MOSNÁČEK, Jaroslav. Preparation of functional copolymers of alpha-methylene-gamma-butyrolactone and epsilon-caprolactone. In PMA 2015 & SRC 2015 : book of proceedings. - Bratislava : STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 179-180. ISBN 978-80-970923-7-5. Prednáška

17.) Charakterizácia polymérov citlivých na vonkajšie podnety s rôznou topológiou pomocou vodnej gélovej permeačnej chromatografie.
(Characterization of stimuli sensitive polymers with different topology by aqueous gel permeation chromatography.)

Zodpovedný riešiteľ:	Juraj Kronek
Trvanie projektu:	1.1.2013 / 31.12.2015
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Poľsko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Príprava nového typu hypervetvených polymérov ako makroiniciátorov pre katiónovú polymerizáciu 2-etyl-2-oxazolínu.

19.) LCP BLENDS: Multifázové systémy obsahujúce kvapalnokryštalické polyméry.
(Study of liquid-crystalline polymers and their composites.)

Zodpovedný riešiteľ:	Juraj Kronek
Trvanie projektu:	1.1.2014 / 31.12.2015
Evidenčné číslo projektu:	APVV-SK-CZ-2013-0234
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	3 880.00 € (APVV)

Dosiahnuté výsledky:

Pripravili sa kvapalnokryštalické poly(esteramidy) s nižšími teplotami teplotných prechodov. Zistila sa závislosť dielektrických, termických a kryštalografických vlastností od štruktúry poly(esteramidov).

20.) (Bio)polymers and bioinspired materials for biomedicine.
(Bio)polyméry a bio-inšpirované polyméry pre biomedicínu.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.1.2014 / 31.12.2015
Evidenčné číslo projektu:	APVV-SK-CZ-2013-0206
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 4 000,00 €

Dosiahnuté výsledky:

Získali sa kopolyméry obsahujúce poly(2-etyl-2-oxazolínové) segmenty vyznačujúce sa vysokou biokompatibilitou a polyetylénimínové jednotky, ktoré sú polyelektrolytom. Taktiež sa pripravili kopolyméry poly(2-izopropenyl-2-oxazolínu) s N-vinylpyrolidónom.

Výstupy:

1. SHAH, R. - KRONEKOVÁ, Zuzana - ZAHORANOVÁ, Anna - ROLLER, L. - SAHA, N. - SAHA, P. - KRONEK, Juraj. In vitro study of partialy hydrolyzed poly(2-ethyl-2-oxazolines) as materials for biomedical applications. In Journal of Materials Science: Materials in Medicine, 2015, vol. 26, iss. 4, art.no. 157.

21.) Antibakteriálne vlastnosti polymérov modifikovaných nízkoteplotnou plazmou.
(Antibacterial properties of polymers modified by low-temperature plasma.)

Zodpovedný riešiteľ:	Igor Novák
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	-
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Česko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Boli skúmané povrchové vlastnosti a chemické zloženie nízkohustotného polyetylénu (LDPE) očkovaného kyselinou polyakrylovou účinkom bariérovej plazmy pri atmosférickom tlaku. Na povrch LDPE očkovaný kyselinou polyakrylovou boli následne imobilizované benzalkóniumchlorid a bronopol. FTIR a XPS merania potvrdili, že rast hydrofilnosti LDPE bol spôsobený zavedením polárnych funkčných skupín prítomných v antibakterálnych látkach. Antibakteriálny účinok imobilizovaného benzalkóniumchloridu a bronopolu proti bakteriálnym kmeňom S. Aureus a E. Coli bol rozdielny, pričom vyššia účinnosť antibakteriálne upraveného LDPE bola dosiahnutá proti pôsobeniu baktérií S. aureus v porovnaní s E. coli.

22.) Štúdium povrchových a adhéznych vlastností polyimidu a jeho kopolymérov.
(Study of surface and adhesive properties of polyimide and its copolymers.)

Zodpovedný riešiteľ:	Igor Novák
Trvanie projektu:	1.1.2012 / 31.12.2016
Evidenčné číslo projektu:	-
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Česko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Boli skúmané povrchové a adhézne vlastnosti syntetizovaných blokových kopolymérov polyimidu s polysiloxánom (PIS). Súčasne sa študovala povrchová drsnosť a chemické zloženie PIS (XPS, ToF SIMS). PIS blokové kopolyméry sa odlišovali dĺžkou polysiloxánových reťazcov. Potvrdilo sa, že, pri väčšej dĺžke polysiloxánových blokov v PIS sa dosiahlo pokrytie povrchu kopolyméru pri nižšej koncentrácii polysiloxánu ako v prípade kratších blokov polysiloxánu.

23.) Farbivami modifikované uhlíkové nanotrubičky pre optotepelnú aktuáciu nanokompozitov.
(Dye-labelled carbon nanotubes for optothermal actuation of nanocomposites.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.1.2013 / 31.12.2015
Evidenčné číslo projektu:	SK-FR-2013-0033
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Francúzsko: 1
Čerpané financie:	APVV: 2 600,00 €

Dosiahnuté výsledky:

Na francúzskom pracovisku sa modifikovali MWCNT troma rôznymi farbičkami (Azure A, Congo Red, Neutral Red). Na Ústave polymérov sme z modifikovaných CNT a EVA kopolyméru prípravili kompozity zamiešaním v tavenine. V ďalšom kroku sme sa zaoberali štúdiom ich foto-aktuačných odoziev pomocou DMA, ďalej na našom ústave boli študované aj XPS merania modifikovaných nanočastíc. Získané výsledky sú spísané do odborného článku, ktorý sa odošle do konca hodnotiaceho obdobia.

Výstupy:

1. CZANIKOVÁ, Klaudia - KRUPA, Igor - SGHAIER, A. B. - CHEHIMI, M. M. - OMASTOVÁ, Mária. Photo-thermal actuation of ethylene vinyl acetate nanocomposites containing carbon nanotubes. In EUPOC 2015 : Conducting Polymeric Materials : Gargnano, Italy, 24 - 28 May 2015 : abstract booklet & list of participants. - Pisa, Italy : University of Pisa, 2015, p. 63.
2. CZANIKOVÁ, Klaudia - SGHAIER, A. B. - CHEHIMI, M. M. - OMASTOVÁ, Mária. Actuators on the base of ethylene vinyl acetate/carbon nanotubes/dyes nanocomposites. In ChemZi : slovenský časopis o chémii pre chemické vzdelávanie, výskum a priemysel : 67. Zjazd chemikov : Horný Smokovec, 7.- 11. september 2015. - Bratislava : Slovenská chemická spoločnosť, 2015, 2015, roč.11, č. 1, s. 156. ISSN 1336-7242.

24.) Fotovoltaické a senzorické vlastnosti grafénu a uhlíkových nanotrubičiek funkcionalizovaných plazmou a chemicky.
(Photovoltaic and sensor properties of plasma and chemical functionalized graphene and carbon nanotubes.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.12.2014 / 30.11.2017
Evidenčné číslo projektu:	SAS - TÜBITAK JRP 2014 /2
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Turecko: 1
Čerpané financie:	24 600,00 €

Dosiahnuté výsledky:

V prvej etape sa na našom pracovisku pripravili kompozity s uhlíkovými nanotrubičkami (MWCNT) a grafén oxidom (GO) pokryté vodivým polymérom polypyrolom (PPY) a na tureckom pracovisku boli použité ako protielektródy v pripravovaných solárnych článkoch (DSSC). PPY/MWCNT nanokompozity boli pripravené in situ chemickou oxidačnou polymerizáciou pyrolu v prítomnosti MWCNT (30 hmotn.% až 50 hmotn.%.). Morfológia modifikovaných uhlíkových nanoštruktúr bola skúmaná pomocou riadkovacej elektrónovej mikroskopie. Röntgenova fotoelektronová spektroskopia PPY/MWCNT nanokompozitov poskytla informácie o stupni MWCNT pokrytia PPY. Cyklická voltametria bola použitá na charakterizáciu prípravených elektród a vodivosti. Fotovoltaické vlastnosti DSSCs s PPY/MWCNT ako protielektródou boli charakterizované pomocou I-V meraní. Prvé získané výsledky ukázali, že GO častice modifikované PPY sú menej atraktívne pre použitie v DSSC v porovnaní s modifikovanými MWCNT. Fotovoltaické vlastnosti DSSC sa znižovali s rastúcim obsahom MWCNT v MWCNT/PPY kompozitoch.

Výstupy:

1. OMASTOVÁ, Mária - KULIČEK, Jaroslav - STEJSKAL, J. - OKSUZ, A. U. Conducting composites with polypyrrole and their application. In Danube Vltava Sava Polymer Meeting : DVSPM 2015 : proceedings of a conference on polymer science. - Linz, Austria : Trauner Verlag Univesitat, 2015, p. 19. ISBN 978-3-99033-491-1.

25.) TRAnsparentné elektricky vodivé polymérne nanKOmpozity na báze nanoštruktúrneho GRafitu.
(Transparent, electrically conductive polymeric nanocomposites on the base of nanostructured graphite.)

Zodpovedný riešiteľ:	Zdenko Špitálsky
Trvanie projektu:	1.1.2015 / 31.12.2016
Evidenčné číslo projektu:	SK-SRB-2013-0044

Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 2350 €

Dosiahnuté výsledky:

Podarila sa zvládnuť výroba dispergovaných koloidných častíc grafénu vo vode metódou elektrochemickej exfoliácie. Zároveň sa pripravili uhlíkové kvantové bodky metódou spaľovania organických látok. Materiály boli charakterizované metódami XPS a AFM. Zároveň sa začali pripravovať prvé transparentne polymérne kompozity plnené pripravenými uhlíkovými plnivami, ktorých charakterizácia bude tvoriť hlavnú činnosť druhého roku.

Výstupy:

1. PREKODRAVAC, J. - MARKOVIĆ, Z. - JOVANOVIĆ, S. - HOLCLAJTNER-ANTUNOVIĆ, I. - PAVLOVIĆ, V. - TODOROVIĆ-MARKOVIĆ, B. Raman spectroscopy study of graphene thin films synthesized from solid precursor, Quantum Optics and Electronics, submitted.
2. MARKOVIĆ, Z. – BUDIMIR, M. - HOLCLAJTNER-ANTUNOVIĆ, I. – PERUŠKO, D. – PAVLOVIĆ, V. - TODOROVIĆ-MARKOVIĆ, B. Large and flat graphene flakes produced by exfoliation of highly oriented pyrolytic graphite: Raman spectroscopy study, Quantum Optics and Electronics, submitted.

Programy: ERANET

26.) M2 Neural: Multifunkčné materiály na rozhraní neurónových systémov.

(M2Neural: Multifunctional Materials for advanced Neural interfaces.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.11.2014 / 30.10.2017
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Superiore Sant'Anna
Počet spoluriešiteľských inštitúcií:	1 - Taliansko: 1
Čerpané financie:	COST: 24 960,00 €

Dosiahnuté výsledky:

V priebehu roku 2015 sa získali vhodné podmienky prípravy hydrogélovej vrstvy na báze zwitteriónov kovalentne naviazané na polyimid. Taktiež sa pripravili hydrogély na báze 2-oxazolínov s nastaviteľnými mechanickými vlastnosťami.

Výstupy:

1. SALGARELLA, AR - RICOTTI, L. - GIUDETTI, G. - KRONEK, Juraj - RIGHI, M. - CUTRONE, A. - CAFARELLI, A. - ZAHORANOVÁ, Anna - ŠRAMKOVÁ, Petra - TREĽOVÁ, Dušana- BOSSI, S. - MICERA, S.- LACÍK, Igor - MENCIASSI, A. Advanced nano-doped materials for long-term neural interfaces, ID 337, 2015, IEEE 15th International Conference on Nanotechnology, Roma, Italy

Programy: Iné

27.) Viackomponentné mikrokapsuly pre alogénnu transplantáciu pankreatických ostrovčekov v predklinickom modeli nehumánnych primátov.
(Multicomponent microcapsules for allogeneic islet transplantation in a comprehensive, preclinical non-human primate model.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.11.2014 / 30.10.2017
Evidenčné číslo projektu:	JDRF 2-SRA-2014-288-Q-R
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Juvenile Diabetes Research Foundation, University of Illinois Chicago
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 1400 €

Dosiahnuté výsledky:

Získala sa nová verzia polymérnej mikrokapsule pripravenej na báze polyelektrolytovej komplexácie modifikovaným procesom enkapsulácie.

Výstupy:

1. VEISEH, O. - DOLOFF, J. C. - MA, M. - VEGAS, A. J. - TAM, H. H. - BADER, A. R. - LI, J. - LANGAN, E. - WYCKOFF, J. - LOO, W. S. - JHUNJHUNWALA, S. - CHIU, A. - SIEBERT, S. - TANG, K. - HOLLISTER-LOCK, J. - ARESTA-DASILVA, S. - BOCHENEK, Matthew - MENDOZAELIAS, J. - WANG, Y. - QI, M. - LAVIN, D. M. - CHEN, M. - DHOLAKIA, N. - THAKRAR, R. - LACÍK, Igor - WEIR, G. C. - OBERHOLZER, J. - GREINER, D. L. - LANGER, R. - ANDERSON, D. G. Size- and shape-dependent foreign body immune response to materials implanted in rodents and non-human primates. In Nature Materials, 2015, vol. 14, p. 643-651. (36.503 - IF2014). ISSN 1476-1122.
2. NÉMETHOVÁ, Veronika - LACÍK, Igor - RÁZGA, Filip. Vibration technology for micro-encapsulation: The restrictive role of viscosity. In Journal of Bioprocessing and Biotechniques : an open access journal, 2015, vol. 5, iss. 1, art.no. 1000199. (2015 - Scopus). ISSN 2155-9821

28.) *ANTIGRPONANO: Antibakteriálne polymérne nanokompozity na báze grafénu.*
(ANTIbacterial GRaphene/POlymer NANOcomposite.)

Zodpovedný riešiteľ:	Zoran Markovic
Trvanie projektu:	1.12.2015 / 30.11.2018
Evidenčné číslo projektu:	SASPRO 1237/02/02 (co-funded by Maria Curie Actions)
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	EU: 1 167.20 € ; SAV: 1 744.80 €

Dosiahnuté výsledky:

29.) Syntéza dobre definovaných nových kopolymérov pomocou živých polymerizačných metód a pokročilých chromatografických techník.
(The synthesis of well-defined new copolymers using living polymerization methods and advanced chromatographic techniques.)

Zodpovedný riešiteľ:	Jaroslav Mosnáček
Trvanie projektu:	1.1.2015 / 31.12.2017
Evidenčné číslo projektu:	SAV-MOST Taiwan JRP 2014
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Taiwan: 1
Čerpané financie:	25 000,00 €

Dosiahnuté výsledky:

V rámci spoločného výskumného projektu s dvomi univerzitami v Taiwane sa riešili dve rôzne témy. 1) vyvíjala sa photochemicky indukovaná radikálová polyadícia s prenosom atómu za účelom prípravy polymérov s hydrolyzovateľným hlavným reťazcom. Ako monomér sa použil 4-vinylbenzyl 2-bromo-2-phenylacetát, ktorý okrem vinylovej väzby obsahuje v svojej štruktúre i iniciačnú alkyl bromidovú skupinu a teda slúži ako monomér i ako iniciátor. PhotoATRPA katalyzovaná systémom CuBr/L umožnila prípravu polyméru za oveľa kratší čas a z nižším množstvom katalyzátora v porovnaní s ATRPA katalyzovanou systémom CuBr/L/Cu0. 2) vyvíjala sa metóda kombinácie aniónovej a RDRP polymerizácie pre prípravu triblokových amfifilných blokových kopolymérov obsahujúcich okrem hydrofóbneho a hydrofilného bloku aj elastický blok, za účelom prípravy nových typov materiálov aplikovateľných ako náplaste. V prvom roku sa podarilo pripraviť diblokové kopolyméry, pričom v ďalšom roku sa budú polymerizácie optimalizovať na prípravu triblokových kopolymérov.

Výstupy:

1. ILČÍKOVÁ, Markéta - MRLÍK, M. - MOSNÁČEK, Jaroslav. Chapter 6: Thermoplastic elastomers with photoactuating properties. Thermoplastic Elastomers - Synthesis and Applications. InTech d.o.o, Rijeka, Croatia. Edited by Chapal Kumar Das, ISBN 978-953-51-2223-4, 176 pages, Publisher: InTech, Chapters published November 26, 2015 under CC BY 3.0 license.

30.) CASSETTE: Konjugovaný anti-sense systém pre selektívne a špecifické umlčanie BCR - ABL: Inovatívna stratégia pre liečbu CLM.
(Conjugated Antisense system for Selective and Specific BCR-ABL supprEssion: An innovaTive straTegy for CML treatment.)

Zodpovedný riešiteľ:	Filip Rázga
Trvanie projektu:	1.4.2015 / 31.3.2018
Evidenčné číslo projektu:	SASPRO 0057/01/02 (co-funded by Maria Curie Actions)
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	EU: 20 447.00 € ; SAV: 28 232.00 €

Dosiahnuté výsledky:

i)In silico modeling pilotného systému
ii)Syntéza základných výstavbových blokov
iii)Syntéza polymérneho komponentu

Výstupy:

1. RÁZGA, Filip – NÉMETHOVÁ, Veronika. A method for altering the functional status of mRNA allowing its selective and specific recognition. PP-50065-2015, podaná prihláška

31.) Nové materiály prechádzajúce fázovou premenou so zlepšeným prestupom tepla.
(New Phase Change Materials with improved heat transfer properties.)

Zodpovedný riešiteľ:	Zdenko Špitálsky
Trvanie projektu:	1.11.2011 / 31.3.2015
Evidenčné číslo projektu:	NPRP No. : 4 – 465 – 2 -173
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Qatar University
Počet spoluriešiteľských inštitúcií:	1 - Katar: 1
Čerpané financie:	

Dosiahnuté výsledky:

Pripravili sa materiály meniace skupenstvo (angl. Phase Change Materials (PCM)) s vylepšenou tepelnou vodivosťou z lineárneho nízkohustotného polyetylénu, parafínového vosku s teplotou topenia približne 42°C a expandovaného grafitu a študovali sa ich fyzikálne vlastnosti. Absorpcia tepelnej energie je realizovaná fázovými prechodmi v štruktúre vosku, tj. prechodom tuhá – tuhá fáza medzi rôznymi kryštalickými štruktúrami vosku ale predovšetkým prechodom tuhá fáza - kvapalina. Zlepšenie tepelnej vodivosti polymérnych materiálov sa získalo zabudovaním expandovaného grafitu do polymérnej zmesi. Expandovaný grafit má zosilňujúci účinok na PCM, čo vedie k zvýšeniu húževnatosti materiálu. Negatívom je, že samotný vosk vyteká z polymérnej matrice, ale prítomnosť grafitu významne znižuje straty vosku zo vzoriek.

Výstupy:

1. *KRUPA, Igor* - NÓGELLOVÁ, Zuzana - ŠPITALSKÝ, Zdenko - MALÍKOVÁ, Marta - *SOBOLČIAK, Patrik* - ABDELRAZEQ, H. W. - OUEDERNI, M. - KARKRI, M. - JANIGOVÁ, Ivica - AL-MAADEED, M. A. S. A. Positive influence of expanded graphite on the physical behavior of phase change materials based on linear low-density polyethylene and paraffin wax. In *Thermochimica Acta*, 2015, vol. 614, p. 218-225. (2.184 - IF2014). ISSN 0040-6031.

2. KARKRI, M. - LACHHEB, M. - NÓGELLOVÁ, Zuzana - BOH, B. - SUMIGA, B. - ALMAADEED, M. A. - FETHI, A. - *KRUPA, Igor*. Thermal properties of phase-change materials based on high-density polyethylene filled with micro-encapsulated paraffin wax for thermal energy storage. In *Energy and Buildings*, 2015, vol. 88, p. 144-152. (2.884 - IF2014). ISSN 0378-7788.

Projekty národných agentúr

Programy: VEGA

1.) Štrukturálno-dynamická charakterizácia objemových a priestorovo limitovaných sklotvorných a kryštalizujúcich materiálov pomocou ESR techniky.
(Structure-dynamic characterization of bulk and space-limited glass-forming and crystallizing materials by means of ESR technique)

Zodpovedný riešiteľ:	Josef Bartoš
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0017/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 3 748,00 €

Dosiahnuté výsledky:

V komplementárnom ESR a PALS štúdiu komplexných organických médií v objemovom stave sa v neformálnej spolupráci s poľským partnerom testovali naše empirické pravidlá nájdené pre spinovú sondu TEMPO v amorfných látkach: tau3(T50G) = const.1 a tau3 (TX1fast) = const.2 na ďalšej kryštalickej organickej substancii tj. nepárnom n-alkáne n-tridekane (n-TRD) v porovnaní s párnym n-alkánom, n-hexadekánom (n-HXD). Našlo sa, že okrem 1. pravidla spojeného s tzv. solid-solid prechodom pri Tss ako aj 2. pravidla súvisiaceho so solid-liquid prechodom pri Tm existujú aj ďalšie špecifické štrukturálno-dynamické prechody v kryštalickej fázach nedetegovateľné pomocou klasickej DSC pre obidva n-alkány.

Výstupy:

1. LUKEŠOVÁ, Miroslava - ZGARDZINSKA, B. - ŠVAJDLENKOVÁ, Helena - ZALESKI, R. - CHARMAS, B. - BARTOŠ, Josef. Spin probe dynamics in relation to free volume in crystalline organics from ESR and PALS: N-tridecane. In *Physica B: Condensed Matter*, 2015, vol. 476, p. 100-108. (1.319 - IF2014). ISSN 0921-4526.
2. ŠVAJDLENKOVÁ, Helena - ZGARDZINSKA, B. - EDELMANN, M. Spin probe dynamics in crystalline organics and its relationships to free volume using ESR and PALS. The case of odd vs. even n-alkanes. In *XXVI.I nternational EPR Seminar 2015*, Graz University of Technology, Graz, June 8.-10.2015. Prednáška-O/P 21

2.) Simulácie skladania a agregácie polypeptidov.
(Simulations of folding and aggregation in polypetides)

Zodpovedný riešiteľ:	Tomáš Bleha
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0079/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 2 986,00 €

Dosiahnuté výsledky:

Pri molekulových simuláciach mechanických vlastností helikálnych polymérov sa zistilo, že

ich kompresia prebieha pomocou hladkému ohybu vlákna len po bod kritického vybočenia (buckling). V bode bucklingovej nestability dochádza k lokálnemu roztopeniu závitnice a k jej zlomeniu (kinku), čo spôsobí efektívne mechanické „zmäkčenie“ helixu. Tento typ mechanického zlyhania môže významne ovplyvňovať biofunkcie rôznych nanoškálových helikálnych objektov ako sú alfa-závitnice a DNA. Simulácie poskytli presvedčivý obraz o stochastickej dynamike bucklingového procesu a o detailoch jeho mechanizmu na atomistickej úrovni.

Výstupy:

1. PALENČÁR, Peter - BLEHA, Tomáš. Bending and kinking in helical polymers. In *Journal of Polymer Science. Part B. Polymer Physics* 2015, vol. 53, 1345-1357.

3.) Kompozitné a smart nanočastice a nanomateriály: príprava, modifikácia a kolektívne vlastnosti.
(Composite and smart nanoparticles and nanomaterials: preparation, modification and collective properties.)

Zodpovedný riešiteľ:	Ignác Capek
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	2/0040/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 2 707,00 €

Dosiahnuté výsledky:

Zvláštna pozornosť je venovaná nanočasticiam so štruktúrou jadro-obal. Vyznačujú sa zlepšenými koloidnými vlastnosťami a netradične vysokou funkčnosťou, spôsobenou blízkosťou funkčne rozdielnych zložiek. Tieto štruktúry nie sú ideálne len pre štúdium efektu blízkosti funkčných skupín, ale sú taktiež vhodné na štruktúrnu stabilizáciu, nakoľko obalová vrstva chráni jadro pred oxidáciou. Navyše, organická vrstva obalu zabezpečuje miesto pre modifikáciu a funkcionalizáciu povrchu, ako napr. pripojenie anorganického jadra k organickým a iným povrchom, čím sa zlepšujú ich pôvodné optické vlastnosti a stávajú sa potenciálne biokompatibilnými. S použitím monoméru s rôznou rozpustnosťou v disperznej a miniemulznej polymerizácii sa dosiahne požadovaná povrchová funkcionalizácia. Napr. kyselina akrylová poskytuje príležitosť pre ďaľšiu funkcionalizáciu s amino-látkami pre cieľové použitie nanočastíc.

4.) Štrukturálne prechody stiesnených semiflexibilných makromolekúl.
(Structural transitions of confined semi-flexible macromolecules.)

Zodpovedný riešiteľ:	Peter Cifra
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0093/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 5 861,00 €

Dosiahnuté výsledky:

Vyšetrili sme prednedávnom navrhnuté linearizačné experimenty s výhodnou analýzou v tenkých pásikových kanáloch použitím Monte Carlo simulácií. Zvýšené natiahnutie reťazcov v

takýchto kanáloch spôsobené zvýšeným vylúčeným objemom v dvojrozmernom systéme sa podstatne znižuje prechodom ku zatiaľ experimentálne dostupným kanálom v tvare štrbiny. V úzkych pásikových kanáloch sme potvrdili typický režim charakteristický pre dvojrozmerné systémy. Rozšírením kanálu v smere kolmom na plochu pásika, teda prechodom ku štrbinovému kanálu, sa znižuje výhodné natiahnutie reťazcov a pre menej ohybné reťazce nie príliš dlhé reťazce pozorujeme Gausssovský režim. Pseudoidealita reťazcov je podporená nezávisle z kriviek natiahnutia, zmenami natiahnutia so zmenou tuhosti reťazcov, z porovnania predpovedaných a pozorovaných hraníc režimu v konkrétnom vyšetrovanom systéme a zo správania štruktúrneho faktoru reťazcov. Správanie v hranatom kanáli sa pozoruje ak kanál-pásik (pôvodne hrúbky jedného monoméru) dosiahne hrúbku väčšiu ako približne jednej pätiny veľkosti perzistentnej dĺžky reťazca. Takáto maximálna hrúbka prúžkového kanálu pre zachovanie výhody tohoto usporiadania je veľmi malá a má dopad na realizáciu DNA linearizačných experimentov v nanofluidných zariadeniach. Táto analýza má však aj širšie implikácie pre stesnané polyméry.

Výstupy:

1. BENKOVÁ, Zuzana - NÁMER, Pavol – CIFRA, Peter. From stripe to slab confinement for DNA linearization in nanochannels. In Soft Matter, 2015, vol. 11, p. 2279-2289. (4,151 – IF2014)

5.) Fotochemicky aktívne systémy a značky pre polymérny výskum.
(Photochemically active systems and probes for polymer research.)

Zodpovedný riešiteľ:	Martin Danko
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	2/0112/13
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 10 727,00 €

Dosiahnuté výsledky:

V problematike spektrálnej charakterizácie donorno-akceptorných chromofórov sa pokračovalo v charakterizácií katiónových derivátov s benzo(tris)tiazolínovým akceptorom a aminoarylovým donorom pripravených v rámci spolupráce s Dr. Cigáňom a prof. Gáplovským z PriF UK. Deriváty vykazujú veľmi zaujímavé zvýšenie kvantového výťažku fluorescencie v niektorých prípadoch až o dva rády v polymérnych matriciach neutrálneho PVC a aniónového poly(styrén-sulfonátu) sodného oproti hodnotám v roztokoch. Táto intenzívna fluorescencia bola pozorovaná napriek zachovaniu výrazného komplexu s prenosom náboja (ICT) v základnom stave (UV spektrá), ktorý je zvyčajne neradiačný.

Charakterizovali sa singletové stavy aduktov pyrén-tetramethylpiperidínových amínov (NH) alebo nitroxidov (NO) spojených –CH=N- imínovým mostíkom a jeho redukovanou metyl-amínovou formou –CH2-NH-. Tradičné pyrénové UV a emisné spektrá sú pre tieto deriváty batochrómne posunuté, pričom v emisných spektrách pri nízkych koncentráciách látok sa objavuje excimérna emisia, ktorá môže byť pripísaná iba tvorbe špecifických agregátov (dimérov). Najviac sa to prejavuje pre imínový NH derivát v protickom metanole, ale neočakávane aj v nekonjugovanom metyl-amíne. V nepolárnom cyklohexáne toto pozorované nebolo. V časovo-rozlíšených spektrách naviac vidno dynamický charakter diméru počas veľmi krátkej doby života excitovaného stavu. Fluorescenčné nitroxidy sú zaujímavou skupinou senzorických látok využívaných pri štúdiu radikálových (degradácia materiálov, radikálový atak DNA) alebo oxidačných procesov (oxidačný stres v bunke, metabolizmus vitamínu C), pričom daný jav môže byť užitočný na rozhraní vnútro-bunkových priestorov a membrán, kde sa mení polarita prostredia.

Výstupy:

1. DANKO, Martin - *KASÁK, Peter* - HRDLOVIČ, Pavol. The interactions of probes based on substituted pyrene derivatives in polymer matrices, spectral study. In *Journal of Photochemistry and Photobiology A : polymer chemistry*, 2015, vol. 307, p. 79-87. (2.495 - IF2014). ISSN 1010-6030.
2. ILČÍKOVÁ, Markéta - MRLÍK, M. - SEDLÁČEK, T. - DOROSHENKO, M. - KOYNOV, K. - DANKO, Martin - MOSNÁČEK, Jaroslav. Tailoring of viscoelastic properties and light-induced actuation performance of triblock copolymer composites through surface modification of carbon nanotubes. In *Polymer : the International Journal for the Science and Technology of Polymers*, 2015, vol. 72, p. 368-377. (3.562 - IF2014). ISSN 0032-3861.
3. ILČÍKOVÁ, Markéta - MRLÍK, M. - MOSNÁČEK, Jaroslav. Chapter 6: Thermoplastic elastomers with photoactuating properties. Thermoplastic Elastomers - Synthesis and Applications. InTech d.o.o, Rijeka, Croatia. Edited by Chapal Kumar Das, ISBN 978-953-51-2223-4, 176 pages, Publisher: InTech, Chapters published November 26, 2015 under CC BY 3.0 license.
4. *KÓSA, Csaba* - SEDLAČÍK, M. - FIEDLEROVÁ, Agnesa - CHMELA, Štefan - BORSKÁ, Katarína - MOSNÁČEK, Jaroslav. Photochemically cross-linked poly(epsilon-caprolactone) with accelerated hydrolytic degradation. In *European Polymer Journal*, 2015, vol. 68, p. 601-608. (3.005 - IF2014). ISSN 0014-3057.
5. MOSNÁČEK, Jaroslav - ECKSTEIN-ANDICSOVÁ, Anita - BORSKÁ, Katarína. Ligand effect and oxygen tolerance studies in photochemically induced copper mediated reversible deactivation radical polymerization of methyl methacrylate in dimethyl sulfoxide. In *Polymer Chemistry*, 2015, vol. 6, p. 2523-2530. (5.520 - IF2014). ISSN 1759-9954.
6. ILČÍKOVÁ, Markéta - MRLÍK, M. - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - CSOMOROVÁ, Katarína - SASINKOVÁ, V. - KLEINOVÁ, Angela - MOSNÁČEK, Jaroslav. A tertiary amine in two competitive processes: Reduction of graphene oxide vs. catalysis of atom transfer radical polymerization. In *RSC Advances*, 2015, vol. 5, p. 3370-3376. (3.840 - IF2014). ISSN 2046-2069.
7. DANKO, Martin - *KASÁK, Peter* - HRDLOVIČ, Pavol. Spectral study of interactions of pyrene based probes in polymer matrices. In *ChemZi : slovenský časopis o chémii pre chemické vzdelávanie, výskum a priemysel : 67. Zjazd chemikov : Horný Smokovec, 7.- 11. september 2015*. - Bratislava : Slovenská chemická spoločnosť, 2015, 2015, roč.11, č. 1, s. 141-142. ISSN 1336-7242. Prednáška

6.) Mikro- a nanovlákna z prírodných zdrojov na báze sacharidov a bielkovín pripravené elektrostatickým zvlákňovaním.
(Micro- and nanofibers from natural resources on the base of sacharides and proteins prepared by electrospinning.)

Zodpovedný riešiteľ:	Anita Eckstein
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0142/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 4 164.00 €

Dosiahnuté výsledky:

V hodnotenom období sa optimalizovali podmienky elektrostatického zvlákňovania surového hodvábu pre prípravu vhodného vlákenného produktu, určeného na charakterizáciu, prípadne ďalšiu modifikáciu pomocou vybraného liečiva a to sodnej soli 2-[(2,6-dichlorofenyl)amino]benzen-acetátovej kyseliny známej pod názvom diklofenak. Vlákna boli modifikované prevažne fyzikálne, inkorporáciou liečiva do štruktúry vlákna a následne podrobené štúdiu uvoľňovania liečiva z vlákennej vrstvy, pričom sa zistila maximálna doba uvoľňovania na 6-7 dní pričom najväčsie množstvo liečiva sa uvoľnilo do 48 hodín. Vlákenné vrstvy sa podrobili aj štúdiu vplyvu

uvoľňovaného liečiva na životnosť niekoľkých typov buniek ako sú myšie fibroblasty (MRC 5) a rakovinové bunky typu HELA a Ca SKI. Bola pritom dokázaná až 50% úmrtnosť rakovinových buniek, pričom liečivo ako aj samotná vlákenná hodvábna vrstva neovplyvňuje životnosť fibroblastov.

Výstupy:

1. ŠIŠKOVÁ, Alena – DUBAJ, T. – OPÁLEK, A. – KLEINOVÁ, Angela – RYCHTER, P. – ECKSTEIN, Anita. Functionalizing electrospun fibres with active molecules. In Challenges in Science and Technology of Polymer Materials, Polinnova: Bansko, Bulgaria, 19-23 May, 2015: Book of abstracts. http://challenges2015.polymer.bas.bg/.

7.) Relaxačné a časovo závislé efekty pri deformácii viacfázových systémov na báze polymérnej matrice.
(Relaxation and time dependent effects at deformation of multiphase systems with polymeric matrix.)

Zodpovedný riešiteľ:	Ivan Chodák
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	2/0108/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 9 364,00 €

Dosiahnuté výsledky:

Pokračovalo sa v prácach na charakterizácii stužujúcej fyzikálnej siete plniva pomocou on-line meraní zmien elektrickej vodivosti počas uniaxiálnej mechanickej deformácie. Podrobnejšie sa skúmali zákonitosti zmien počas cyklickej deformácie, kde sa zistilo, že zmeny elektrickej vodivosti presne korelujú so zmenami mechanického napätia vynaloženého na deformáciu. Tieto práce naznačujú súvislosti s fenoménom Payneeovho efektu a predpokladáme, že metodiku budeme môcť v priebehu ďalšieho riešenia využiť na detailnejšie popísanie uvedeného javu na nadmolekulovej úrovni.
Urobili sa ďalšie práce týkajúce sa štúdia sieťovania termoplastov. V roku 2015 sa ukončilo štúdium sieťovania polyamidov a kompozitov na báze polyamidov plnených skleným vláknom, kde sieťovanie bolo iniciované gama lúčmi. Ukázali sa niektoré zaujímavé javy pri porovnaní sieťovania na vzduchu a v inertnej atmosfére, ktoré súvisia s oxidáciou polyméru následkom ožiarenia.

Výstupy:

1. PODHRADSKÁ, Silvia - OMASTOVÁ, Mária - CHODÁK, Ivan. Effect of uniaxial deformation and relaxation of rubber-carbon black composites on their electrical properties. In KGK - Kautschuk Gummi Kunstoffe, 2015, vol. 68, no. 5, p. 45-51. (0.212 - IF2014). ISSN 0948-3276.
2. PORUBSKÁ, M. - BABIĆ, D. – JANIGOVÁ, Ivica - ŠLOUF, M. – JOMOVÁ, K. - CHODÁK, Ivan. The effect of gamma irradiation in air and inert atmosphere on structure and properties of virgin or glass fibre-reinforced polyamide 6. Polymer Bulletin, prijaté do tlače.
3. CHODÁK, Ivan - *KRAJČI, Juraj* - ŠPITALSKÝ, Zdenko. Similarities between elastomeric and thermoplastic matrices in the structure of reinforcing carbon black filler network. In Eurofillers Polymer Blend 2015 : Montpellier, France, April 26th - 30th, 2015 : book of abstracts. - Montpellier, France : Universite Montpellier, 2015, non p.

8.) Predoxidácia polymérov na ich ceste k biodegradácii.
(Pre-oxidation of polymers on their route to biodegradation.)

Zodpovedný riešiteľ:	Ivica Janigová
Trvanie projektu:	1.1.2015 / 31.12.2017
Evidenčné číslo projektu:	1/0122/15
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 3 718,00 €

Dosiahnuté výsledky:

Pôsobenie UV svetla na Ecoflex ako biodegradovateľný polymér ukázalo výraznejšie posuny hodnôt termických charakteristík smerom k nižším hodnotám po 56 dňoch pôsobenia UV svetla. Pozorovania pomocou elektrónovej mikroskopie potvrdili výrazné zmeny na povrchu polyméru.

9.) Biodegradovateľné polyméry a ich využitie v oblasti pôdohospodárstva a obalových aplikáciách.
(Biodegradable polymers for agricultural applications and food packaging.)

Zodpovedný riešiteľ:	Jozef Kollár
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0167/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 6 363,00 €

Dosiahnuté výsledky:

Štúdium degradácie mulčovacej fólie na báze PLA-PHB (poly(lactic acid)-poly(3-hydroxybutyrate)). Degradácia bola sledovaná v reálnych podmienkach pri pestovaní papriky ako aj pri umelom UV ožarovaní. Starnutie fólie bolo sledované pomocou GPC a mechanické vlastnosti pomocou DSC. Reálne vzorky ako aj vzorky použité pri UV ožarovaní preukazovali nárast elastického modulu. Ťahové skúšky potvrdili zmenu ťahového napätia i predĺženia po 60 dňoch okrem vzoriek, ktoré sa nachádzali zakopané v pôde. Preukázal sa pozitívny efekt mulčovacej fólie na úrodu sladkej papriky (nárast hmotnosti plodu, väčšie množstvo karotenoidov pri zachovaní koncentrácie vitamínu C).

10.) Polyméry na báze 2-oxazolínov pre cielený transport liečiv a kontrolovanú adhéziu buniek.
(Polymers based on 2-oxazolines for targeted drug delivery and controlled cell adhesion.)

Zodpovedný riešiteľ:	Juraj Kronek
Trvanie projektu:	1.1.2015 / 31.12.2017
Evidenčné číslo projektu:	2/0163/15
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV

Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: VEGA: 7 655,00 €

Dosiahnuté výsledky:

V uplynulom období bolo naše úsilie zamerané na prípravu a charakterizáciu hydrogélov presietených bis(2-oxazolínovými) sieťovadlami. Použitie bis(2-oxazolínových) sieťovadiel s rôznou dĺžkou alifatického reťazca (butylén,hexametylén, oktametylén) umožňuje presnejšiu kontrolu nad vlastnosťami hydrogélov (stupeň napučania, Youngov modul) a takéto gély môžu slúžiť ako platforma na kultiváciu neadherentných bunkových línií.

Výstupy:

1. ZAHORANOVÁ, Anna – KRONEKOVÁ, Zuzana – ZAHORAN, M. – CHORVÁT, Jr., D. – JANIGOVÁ, Ivica - KRONEK, Juraj. Poly(2-oxazoline) hydrogels crosslinked with aliphatic bis(2-oxazolines): Properties, cytotoxicity, and cell cultivation. In Journal of Polymer Science - Polymer Chemistry, 2015, v tlači, DOI 10.1002/pola.20150791
2. ZAHORANOVÁ, Anna - KRONEK, Juraj. Hydrogels based on poly(2-oxazolines) for pharmaceutical applications, In Handbook of Polymers for Pharmaceutical Technologies, Ed. V. Kumar, Wiley-Scrivener, 2016, Vol. 4, p. 231-258

11.) Štúdium biokompatibility polymérov a polymérnych materiálov určených pre biomedicínske aplikácie in vitro analýzou cytotoxicity a bunkovej odpovede na molekulovej úrovni signálnych dráh.

(Biocompatibility study of polymers and polymeric materials suitable for biomedical applications. In vitro analysis of cytotoxicity and cell response at the signal transduction level.)

Zodpovedný riešiteľ: Zuzana Kroneková
Trvanie projektu: 1.1.2015 / 31.12.2017
Evidenčné číslo projektu: 2/0156/15
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: VEGA: 6 078,00 €

Dosiahnuté výsledky:

V prvom roku riešenia sme sa zamerali na hodonotenie biokompatibility polymérov a hydrogélov na báze 2-oxazolínov. Ukázalo sa, že nové typy hydrogélov sú biokompatibilné a vhodné na kultiváciu buniek. Zamerali sme sa aj na charajterizaciu biokompatibility peptidom modifikovaných PMCG mikrokapsúl a preukázali ich funkčnosť pri vychytávaní cytotoxických molekúl in vitro.

Výstupy:

1. ZAHORANOVÁ, Anna – KRONEKOVÁ, Zuzana – ZAHORAN, M. – CHORVÁT, Jr., D. – JANIGOVÁ, Ivica - KRONEK, Juraj. Poly(2-oxazoline) hydrogels crosslinked with aliphatic bis(2-oxazolines): Properties, cytotoxicity, and cell cultivation. In Journal of Polymer Science - Polymer Chemistry, 2015, v tlači, DOI 10.1002/pola.20150791
2. KRONEKOVÁ, Zuzana – MIHÁLOVÁ, Andrea – SLÁVIKOVÁ, M. – UHELSKÁ, Lucia – LACÍK, Igor. Functionalization of hydrogels with thiol-terminated peptides for enhancing immuno-protection of encapsulated cells. In European Polymer Congress (EPF 2015), Dresden, Nemecko, 2015, 21. - 26. 6. 2015: Book of Abstracts, p. 195, BIO-L-81.

3. ZAHORANOVÁ, Anna - KRONEKOVÁ, Zuzana - ZAHORAN, M. - CHORVÁT JR., D.- KRONEK, Juraj. 2-Ethyl-2-Oxazoline-based Hydrogels as Matrices for Cell Cultivation. In Proceedings of EPF Congress, Dresden, Nemecko, BIO-L-22, p. 180
4. KRONEK, Juraj – ZAHORANOVÁ, Anna – *MIKULEC, Marcel* – KRONEKOVÁ, Zuzana. Hydrogels based on poly(2-oxazoline)s. In 3rd CEEPN Workshop, 23. – 26. 9. 2015, Iasi, Rumunsko, p. 5-6.

12.) Kinetika a bioaplikácie zwitteriónových polymérov.
(Kinetics and bioapplications of zwitterionic polymers.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0198/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 11 777,00 €

Dosiahnuté výsledky:

Opísanie kinetiky a mechanizmu homopolymerizácie metakrylátových sulfobetaínových monomérov. Využitie karboxybetaínových polymérov pre pokrývanie neurálnych elektród.

Výstupy:

1. LACÍK, Igor - *SOBOLČIAK, Patrik - STACH, Marek* - CHORVÁT, D. - *KASÁK Peter.* Propagation rate coefficient for sulfobetaine monomers by PLP−SEC. *Polymer*, odoslané 2015

13.) Oxidačné a hydrolytické starnutie celulózy ako dôležitý faktor zmien ich horľavosti. *(Oxidative and hydrolytic ageing of cellulose derivatives as an important factor of flammability changes.)*

Zodpovedný riešiteľ:	Marta Malíková
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0161/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 2 544,00 €

Dosiahnuté výsledky:

Zatiaľčo degradácia celulózy podľa neizotermickej termogravimetrie v kyslíku prebieha rýchlejšie ako v dusíku, v prípade nitrocelulózy sú rozdiely zanedbateľné (Obr.1). Zistilo sa, že starnutím pri 130 oC na vzduchu v rozsahu 0 – 16 dní výrazne narastá zvyšok po degradácii, čo sa odráža na zmenách pozorovaných dvoch píkov neizotermickej chemiluminiscencie v kyslíku, kedy prvý zodpovedá svetelnej emisii z degradácie samotnej nitrocelulózy a druhý oxidácii vzniknutého uhlíkatého zvyšku. Súčasne sa podľa DSC znižuje maximálna rýchlosť uvoľňovania tepla.
Dva typy nitrocelulózy s obsahom dusíka 10.9 a 12.0 hm% boli degradované za neizotermických podmienok od 40 do 220 °C pri rýchlostiach ohrevu 2.5-10 °C/min a izotermicky v rozsahu 160-210°C v dusíku a v kyslíku. Zaujímavým zistením je, že Irganox 1010 ako inhibítor radikálovych reakcií pozorované neizotermické priebehy vôbec neovplyvňuje. V kónickom kalorimetri tieto vzorky prudko horia už po zapálení zapaľovačom, pričom spalné teplo je iba okolo 12 kJ/g.

Výstupy:

1. HUDÁKOVÁ, Martina. Popis horenia organických rozpúšťadiel ako východiskový prístup pre hodnotenie horľavosti zložitejších systémov. In *Proceedings of Advances in Fire & Safety Engineering 2015*, Zvolen 22.-23.10.2015, ISBN 978-80-228-2823-9. Výveska

14.) Skúmanie povrchových, adhéznych a antibakteriálnych vlastností vybraných medicinálnych polymérov upravených nízkoteplotnou plazmou.
(Investigation of surface, adhesive and antibacterial properties of selected medicinal polymers modified by low-temperature plasma.)

Zodpovedný riešiteľ:	Igor Novák
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0199/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 5 300,00 €

Dosiahnuté výsledky:

PLA fólie s rôznou kryštalinitou boli povrchovo modifikované účinkom nízkoteplotnej mikrovlnovej plazmy a potom boli očkované v parách dvoch vybraných prekurzorov (v alylalkohole a alylamíne). Na povrch PLA očkovaný účinkom plazmy boli imobilizované vybrané antibakteriálne látky - chitosan a pektín, triclosan, chlórhexidín a kyselina alginová. Antibakteriálne modifikovaná PLA bola študovaná z hľadiska povrchových a bakteriostatických vlastností. Potvrdila sa závislosť bakteriostatického efektu chitosanu, triclosanu a kyseliny alginovej po imobilizácii na polymérny povrch od použitého prekurzora. Podľa druhu použitého prekurzora bol pre antibakteriálnu látku imobilizovanú na polymérny povrch zistený odlišný antibakteriálny účinok. Skúmalo sa očkovanie povrchu PP organosilánmi v podmienkach vysoko-energetického plazmového výboja. Množstvo viazaných silánov na očkovanom povrchu vzrástlo po následnej post-plazmovej expozícii v parách primárneho amínu. Pripravil sa povrch PP s polárnymi Si-O väzbami. Silánom očkovaný PP povrch bol chemicky modifikovaný organosilánmi s rôznymi funkčnými skupinami (kyano, merkapto, amido a amino skupinami) s cieľom funkcionalizácie PP pre bioaplikácie. Najefektívnejšou funkcionalizáciou silánom očkovaného PP bola reakcia s 3-kyanopropyltrichlórsilánom, ktorá umožnila permanentne zaviesť kyanoskupiny na povrch vo výťažku 10 kyanoskupín na 100 atómov uhlíka.

Výstupy:

1. NOVÁK, Igor - *POPELKA, Anton* - LEHOCKÝ, M. - VALENTIN, Marian - CHODÁK, Ivan - PRACHÁR, Jozef. Antibacterial pre-treatment of polyethylene using cold plasma. In PMA 2015 & SRC 2015 : book of proceedings. - Bratislava : STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 92-93. ISBN 978-80-970923-7-5.
2. NOVÁK, Igor - SEDLIAČIK, J. - VALENTIN, Marian - ŽIGO, Ondrej - PRACHÁR, Jozef – JURKOVIČ, P. - MATYAŠOVSKÝ, J. Antibacterial modification of polyolefin veneers. In Annals of Warsaw University of Life Sciences - SGGW : Forestry and Wood Technology. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 90, p. 138-142. ISSN 1898-5912.
3. VALENTIN, Marian - NOVÁK, Igor - *KRUPA, Igor* - OMASTOVÁ, Mária. Nanoindentation and its application for the study of nanomechanical properties of plasma treated poly(lactic acid) samples with different crystallinity. In Danube Vltava Sava Polymer Meeting : DVSPM 2015 : proceedings of a conference on polymer science. - Linz, Austria: Trauner Verlag Univesität, 2015, p. 82. ISBN 978-3-99033-491-1.

4. NOVÁK, Igor - CHODÁK, Ivan - SEDLIAČIK, J. - *POPELKA, Anton* - PRACHÁR, Jozef - MATYAŠOVSKÝ, J. - JURKOVIČ, P. Antibacterial modification of polymer veneers. In Annals Warsaw University of Life Sciences : Forestry and Wood Technology. - Warsaw, Poland : Warsaw University of Life Sciences Press, 2015, no. 92, p. 307-311. ISSN 1898-5912.

15.) Polymérne nanokompozity a hybridy a ich aplikácie ako senzory a aktuátory.
(Polymeric nanocomposites and hybrids and their applications as sensors and actuators.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	2/0149/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 16 000,00 € + 2929,00 €

Dosiahnuté výsledky:

Pripravili sa vodivé kompozitné materiály na báze poly(metylmetakrylátu) a mnohostenných uhlíkových nanotrubičiek (PMMA/MWCNT) použitím roztokových metód a zamiešania v tavenine. Na štúdium elektrickej vodivosti a perkolačného prahu, v závislosti od druhu prípravy kompozitu sa použili širokopásmová dielektrická spektroskopia a 4-bodová metóda merania elektrickej vodivosti. Zistilo sa, že najnižšiu perkoláciu, t.j. 0,03 obj. % možno dosiahnuť pre kompozity pripravené odlievaním z roztoku použitím toluénu a chloroformu. Najvyššia elektrická vodivosť 1,57×10-1 S/cm bola nameraná pre kompozit pripravený roztokovou metódou v toluéne použitím 3,67 obj. % MWCNTs. Štúdium morfológie prostredníctvom rastrovacej elektrónovej mikroskopie potvrdilo dobrú distribúciu uhlíkových nanotrubičiek v kompozite. Pripravila sa séria nanokompozitov, ktoré boli testované ako aktuátory. Študovalo sa starnutie polypyrolu a vplyv tenzidov pri jeho syntéze.

Výstupy:

1. TABAČIAROVÁ, Jana - MIČUŠÍK, Matej - FEDORKO, P. - OMASTOVÁ, Mária. Study of polypyrrole aging by XPS, FTIR and conductivity measurements. In Polymer Degradation and Stability, 2015, vol. 120, p. 392-401. (3.163 - IF2014). (2015 - Current Contents). ISSN 0141-3910.
2. WINTER, A. D. - CZANIKOVÁ, Klaudia - LARIOS, E. - VISHNYAKOV, V. - JAYE, Ch. - FISCHER, D. A. - OMASTOVÁ, Mária - CAMPO, E. M. Interface dynamics in strained polymer nanocomposites: Stick-slip wrapping as a prelude to mechanical backbone twisting derived from sonication-induced amorphization. In Journal of Physical Chemistry C, 2015, vol. 119, no. 34, p. 20091-20099. (4.772 - IF2014). ISSN 1932-7447.
3. MOSNÁČKOVÁ, Katarína - ŠPITALSKÝ, Zdenko - KULIČEK, Jaroslav - PROKEŠ, J. - SKARMOUTSOU, A. - CHARITIDIS, C. A. - OMASTOVÁ, Mária. Influence of preparation methods on the electrical and nanomechanical properties of poly(methyl methacrylate)/multiwalled carbon nanotubes composites. In Journal of Applied Polymer Science, 2015, vol. 132, art.no. 41721. (1.768 - IF2014). ISSN 0021-8995.

16.) Nanoštrukturované polyméry a nanoštruktúra v polyméroch.
(Nanostructured polymers and polymer nanostructure.)

Zodpovedný riešiteľ:	Dušan Račko
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	2/0068/13
Organizácia je koordinátorom projektu:	áno

Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 834,00 €

Dosiahnuté výsledky:

Študovali sme štruktúru a dynamiku hviezdicových polymérov pomocou hrubozrnných molekulovo-dynamických simulácií a analyzovali sme štruktúrne prechody polo-tuhých makromolekúl uzavretých v nano-kanáloch. Konformácie hviezdicových polymérov v úzkych kanáloch sú dané šírkou kanálu, tuhosťou ramien a počtom ramien stesnaných spoločne v danom regióne pozdĺž kanála. Zamerali sme sa na konformačný prechod, kde sú všetky ramená na začiatku v jednom smere úzkeho kanála. Zistili sme, že únik ramien nepostupuje od konca ramien, ale postupuje vytvorením slučky od stredu hviezdice. Únik ramien je stupňovitý proces a hnacia sila je úmerná sile stesnania ramien v kanáli.

Výstupy:

1. RAČKO, Dušan - CIFRA, Peter. Arm retraction and escape transition in semi-flexible star polymer under cylindrical confinement. In Journal of Molecular Modeling, 2015, vol. 21, art.no. 186. (1.736 - IF2014). ISSN 1610-2940. 10.1007/s0089-015-2735-9.

17.) Modelovanie a syntéza hybridného konjugovaného systému pre protinádorovú terapiu.
(Modeling and synthesis of hybrid conjugated systems for anticancer therapy.)

Zodpovedný riešiteľ:	Filip Rázga
Trvanie projektu:	1.1.2015 / 31.12.2018
Evidenčné číslo projektu:	2/0094/15
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 4 977,00 €

Dosiahnuté výsledky:

i)In silico modeling pilotného systému
ii)Syntéza základných výstavbových blokov
iii)Syntéza polymérneho komponentu

Výstupy:

1. RÁZGA, Filip - NÉMETHOVÁ, Veronika. A method for altering the functional status of mRNA allowing its selective and specific recognition. PP-50065-2015, patentová prihláška

18.) Grafénové polymérne nanokompozity pre environmentálne monitorovanie.
(Graphene containing polymer nanocomposites for environmental monitoring.)

Zodpovedný riešiteľ:	Zdenko Špitálsky
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0119/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA: 5 048,00 €

Dosiahnuté výsledky:

Štúdium elektricky vodivých kompozitov založených na báze elastomérnej matrice a expandovaného grafitu ako plniva. Pomocou komerčného motorového oleja bola skúmaná potenciálna aplikácia ako environmentálnych detektorov. Sledoval sa vplyv veľkosti častíc plniva, hrúbky filmu, dĺžky detektora, teploty a množstva oleja na odozvu detektora. Na štúdium adhézie kompozitného filmu na vybraných materiáloch boli použité peel testy. S rastúcou hrúbkou filmu detektora rástla doba odozvy. Avšak pre tenké vzorky mal prechádzajúci prúd príliš nízke hodnoty a bol ovplyvnený šumom signálu. Pri sledovaní vplyvu dĺžky detektora sa čas odozvy predlžoval. S klesajúcou teplotou klesala rýchlosť odozvy detektora, avšak aj pri nižších teplotách bola stále v praktickom časovom rozmedzí. Navrhnutý detektor nebol schopný rozlíšiť rôzne množstvá oleja, a preto môže byť použitý len na získavanie kvalitatívnych informácií. Peel testy ukázali, že pripravené filmy mali dostatočnú adhéziu k rôznym povrchom. Zo získaných dát usudzujeme, že navrhnutý detektor je vhodný pre použitie v praxi. Použitý materiál po nanesení na poróznu textíliu je možné využiť aj ako detektor rôznych pár plynov.

Výstupy:

1. OLEJNIK, R. - ŠPITALSKÝ, Zdenko - PROSTREDNÝ, M. - SLOBODIAN, P. Sensing element on the base of graphene/styre-isopren copolymer for VOC detection in industry. In PMA 2015 & SRC 2015 : book of proceedings. - Bratislava: STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 238-241. ISBN 978-80-970923-7-5.
2. ŠPITALSKÝ, Zdenko - PROSTREDNÝ, M. - *KRUPA, Igor*. Electrically conductive composites based on an elastomeric matrix filled with expanded graphite as a potential oil sensing material. In PMA 2015 & SRC 2015: book of proceedings. – Bratislava: STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 126-127. ISBN 978-80-970923-7-5.
3. Diplomová práca Martin Prostredný - Príprava a charakterizácia nových elektricky vodivých nanokompozitov na báze grafénu, FCHPT STU, úspešne obhájená, cena rektora aj cena dekana
4. PASZKIEWICZ, S. - PAWELEC, I. - SZYMCZYK, A. - ŠPITALSKÝ, Zdenko - MOSNÁČEK, Jaroslav - KOCHMANSKA, A. - ROSLANIEC, Z.. Effect of exfoliated graphite nanoplatelets´size on the phase structure, electrical and barrier properties of poly(trimethylene terephthalate)-based nanocoposite. In Polymer Engineering and Science, 2015, vol. 55, p. 2222-2230.
5. ŠPITALSKÝ, Zdenko - *KRATOCHVÍLA, Ján* - CSOMOROVÁ, Katarína - *KRUPA, Igor* - GRACA, M. P. F. - COSTA, L. C. Mechanical and electrical properties of styrene-isoprene-styrene copolymer doped with explanded graphite nanoplatelets. In Journal of Nanomaterials, vol. 2015, art ID 168485, 9 p. ISSN 1687-4110.

Programy: APVV

18.) Fotoaktívne hybridné nanomateriály s luminiscenčnými a antimikrobiálnymi vlastnosťami.
(Photoactive hybrid nanomaterials with luminescent and antimicrobial properties.)

Zodpovedný riešiteľ:	Juraj Bujdák
Zodpovedný riešiteľ v organizácii SAV:	Martin Danko
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0291-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	3 - Slovensko: 3
Čerpané financie:	APVV: 16596 €

Dosiahnuté výsledky:

Pripravil sa fluorescenčne značený polyetylénglykol neutrálnym benzotioxantónom. Tento polymér bude použitý na prípravu anorganicko/organických hybridných materiálov s fluorescenčnými vlastnosťami z vrstevnatých silikátov. Dokončila sa štúdia agregácie pyrén-cholesterolových derivátov v polymérnych matriciach, ktoré môžu byť dobrým kompatibilizátorom uhlíkových anorganických nanomateriálov ako grafén, uhlíkové nanodoty a uhlíkové nanorúrky v polymérnych kompozitoch.

Výstupy:

1. SAS, S. - DANKO, Martin - LANG, K. - BUJDÁK, J. Photoactive hybrid material based on kaolinite intercalated with a reactive fluorescent silane. In Applied Clay Science, 2015, vol. 108, p. 208-2014. (2.467 - IF2014). ISSN 0169-1317.
2. DANKO, Martin - KASÁK, Peter - HRDLOVIČ, Pavol. The interactions of probes based on substituted pyrene derivatives in polymer matrices, spectral study. In Journal of Photochemistry and Photobiology A : polymer chemistry, 2015, vol. 307, p. 79-87. (2.495 - IF2014). ISSN 1010-6030
3. DANKO, Martin - KASÁK, Peter - HRDLOVIČ, Pavol. Spectral study of interactions of pyrene based probes in polymer matrices. In ChemZi : slovenský časopis o chémii pre chemické vzdelávanie, výskum a priemysel : 67. Zjazd chemikov : Horný Smokovec, 7.- 11. september 2015. - Bratislava : Slovenská chemická spoločnosť, 2015, 2015, roč.11, č. 1, s. 141-142. ISSN 1336-7242.

20.) Biodekorované kompozitné magnetické nanočastice: Príprava, kolektívne vlastnosti a ich aplikácie.
(Biodecorated composite magnetic nanoparticles: Preparation, collective properties and applications.)

Zodpovedný riešiteľ:	Ignác Capek
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0125-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	APVV: 21 821,93 €

Dosiahnuté výsledky:

V tomto roku sme sa venovali príprave plasmonicko-magnetických nanočastíc s rôznou veľkosťou, tvarom a morfológiou (jadro-obal, doménovou štruktúrou, zliatina,...) multi-stupňovým redukcia/stabilizácia procesom, klasickou a templátovou (násadovou) mikroemulznou polymerizáciou. Tieto nanočastice s hydrofilnou koronou sa vyznačujú vysokou reaktivitou a biokompatibilitou k rôznym biomolekulám, mikroorganizmom a bunkám, umožňujúc tvorbu požadovaných nanokonjugátov (nanosenzorov). Chemické, mechanické a fyzikálne vlastnosti nanomateriálov a ich konjugátov sú monitorované priamymi a nepriamymi spôsobmi a technikami. Medzi tie patria napríklad TEM, SEM, SQUID magnetometria a suspektometria, GISAXS štúdie, štúdie tvorby reaktívnych radikálov a fragmentov a ich účasť v reakčných a polymerizačných mechanizmoch, distribúciou atómov rozdielnych kovov medzi jadro a obal nanočastíc.

21.) Nanoštruktúra v makromolekulových systémoch indukovaná stesnaním.
(Nanostructure in macromolecular systems induced by confinement.)

Zodpovedný riešiteľ:	Peter Cifra
Trvanie projektu:	1.7.2012 / 31.12.2015

Evidenčné číslo projektu:	APVV-0451-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 38 760,50 €

Dosiahnuté výsledky:

V náväznosti na predošlé štúdie lineárnych makromolekúl a ich linearizácie v nanokanáloch s asymetrickým profilom až v limite úzkych pásikov sme vyšetrili správanie dlhých cyklických makromolekúl. Vo všetkých geometriách sa potvrdilo očakávanie silnejšieho relatívneho vystierania makrocyklov oproti lineárnym polymérom, ktoré vyplýva zo silnejšieho vylúčeného objemu v cykloch stiesnených kanálom. V prípade makrocyklu stiesneného v kanáli vo forme úzkeho pásiku sa toto vystieranie ešte zosilňuje vplyvom prechodu ku dvojrozmernému systému, ktorý taktiež prispieva ku zosilnenej linearizácii a je už popísaný pre lineárne polyméry. Tieto zistenia budú mať implikácie pre jednomolekulové charakterizácie makrocyklickej DNA v nanofluidných zariadeniach.

Výstupy:

1. RAČKO, Dušan - CIFRA, Peter. Arm retraction and escape transition in semi-flexible star polymer under cylindrical confinement. In Journal of Molecular Modeling , 2015, vol. 21, p. 186 (1.867 -IF2014
2. BENKOVÁ, Zuzana - NÁMER, Pavol - CIFRA, Peter. From stripe to slab confinement for linearization of macromolecules in nanochannels. In Soft Matter, 2015, vol. 11, p. 2279-2289, (4.151- IF2014)

22.) Technológia prípravy tenkých vrstiev karbidu kremíka: Výskum a vývoj technológií prípravy tenkých vrstiev karbidu kremíka pre aplikácie v solárnych článkoch a v tenkovrstvových súčiastkách.
(Silicon carbide thin film technologies: Research and development of silicon carbide thin film technologies for application in solar cells and thin film devices.)

Zodpovedný riešiteľ:	Jozef Huran
Zodpovedný riešiteľ v organizácii SAV:	Angela Kleinová
Trvanie projektu:	1.10.2013 / 31.12.2016
Evidenčné číslo projektu:	APVV-0443-12
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 6723 €

Dosiahnuté výsledky:

V uplynulom roku sa využila technika FTIR na charakterizáciu materiálov upravených nanesením vrstiev karbidu vápnika. Následne sa získané výsledky zloženia povrchovej vrstvy využili na optimalizácu prípravy.

Výstupy:

1. KLEINOVÁ, Angela - HURAN, J. - SASINKOVÁ, V. - PERNÝ, M. - ŠÁLY, V. - PACKA, J. FTIR spectroscopy of silicon carbide thin films prepared PECVD technology for solar cell application. 2015 Optics + Photonics – Reliability of Photovoltaic Cells, Modules, Components and SystemsVIII – proceedings of SPIE 9563. San Diego, California, USA, 9-13 August 2015

23.) Gumárenské zmesi s novými netradičnými plnivami pre špeciálne aplikácie.
(Rubber compounds with new types of fillers for special applications.)

Zodpovedný riešiteľ:	Ivan Chodák
Trvanie projektu:	1.10.2013 / 30.9.2016
Evidenčné číslo projektu:	APVV-0694-12
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Fakulta chemickej a potravinárskej technológie STU, Bratislava
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 18648 €

Dosiahnuté výsledky:

V projekte sme pôsobili predovšetkým ako servisné pracovisko pre špeciálne merania zmesí, pripravených na pracovisku koordinátora. Merali sme detailne dynamické mechanické vlastnosti metódou DMTA a pre charakterizáciu magnetických vlastností sa merali aj odozvy metódou dielektrickej spektroskopie. Tieto výsledky sa vyhodnocovali na pracovisku koordinátora a korelovali s ďalšími charakteristikami, súvisiacimi predovšetkým s magnetickými vlastnosťami gumárskych zmesí, čo bol jeden z dvoch hlavných cieľov projektu.

Výstupy:

1. CHODÁK, Ivan - *KRAJČI, Juraj*. Structure of reinforcing filler network determined by on-line measurement of electrical conductivity of the polymer/carbon black composite. In ICCS18 - International Conference on Composite Structures : book of abstracts. - Porto, Portugal : Universidade do Porto, 2015, p. 68 -69.
2. CHODÁK, Ivan – *KRAJČI, Ju*raj – OMASTOVÁ, Mária. Structure of reinforcing carbon black filler network in polymer composites determined from electrical conductivities, 16th Austrian Chemistry Days, Innsbruck 21.-24.9.2015, Zborník OP-42. Prednáška

24.) METALLOCENE: Nereaktívne tavné lepidlá na báze metalocénových polymérov pre priemyselné aplikácie.
(Unreactive melt adhesives based on metallocene polymers for industrial applications.)

Zodpovedný riešiteľ:	Ivan Chodák
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0566
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 14 123.00 €

Dosiahnuté výsledky:

V prvej fáze proejktu sa urobil výber materiálov na báze metalocénových polyolefínov pre základné matrice adhezív. Tieto polyméry sa charakterizovali z hľadiska primárnych vlastností, ako sú mólové hmotnosti a distribúcia mólových hmotností, viskozita, kryštalinita a niektoré ďalšie.

25.) NANOSEN: Nanočasticové sensory pre plynné biomarkery chorôb.
(Nanoparticles-based sensors of gaseous biomarkers of diseases.)

Zodpovedný riešiteľ:	Ján Ivančo
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Mosnáček

Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0891
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 8 195,00 €

Dosiahnuté výsledky:

Pripravili sa nanočastice oxidov železa s C18 alkylovou obálkou. Zároveň sa pripravil ATRP iniciátor na báze dopamínu a hľadali sa podmienky pre prípravu poly(n-butyl akrylát)ového reťazca pomocou fotoATRP z dopamínu. Oligoméry s dopamínovým koncom by sa následne mali použiť ako obálka pre nanočastice oxidov železa, pričom by mala byť kontrolovaná hrúbka obálky. Ukázalo sa, že ATRP z dopamínu nebeží, pravdepodobne z dôvodu komplexácie katalyzátora dopamínom. Následne sa vyskúšajú dva postupy: 1.) naviazanie dopamínového iniciátora na nanočastice oxidov železa a následná ATRP z povrchu nanočastíc; 2.) ochránenie fenolových skupín dopamínu za účelom potlačenia komplexácie katalyzátora a následna fotoATRP.

26.) BIOGLYKO: Biočipy a biosenzory pre glykorozpoznávanie, ich vývoj, príprava a využitie pri výskume rakoviny.
(Biochips and biosenzors for glycorecognition, their development, preparation and application in cancer research.)

Zodpovedný riešiteľ:	Jaroslav Katrlík
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Mosnáček
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-143-0753
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Chemický ústav SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 3125 €

Dosiahnuté výsledky:

V rámci projektu sa modifikovali kremíkové povrchy sulfobetaínmi a karboxybetaínmi. Modifikácia sa uskutočnila dvomi spôsobmi: 1.) klik reakciou tiolových skupín na povrchu s vinylovymi skupinami zwiteriónovych monomérov; 2.) modifikáciou povrchu ATRP iniciátorom a následnou photoATRP zwiteriónových monomérov z povrchu. V oboch prípadoch sa podarilo povrchy modifikovať, čo bolo dokázané meraním uhla zmáčania ako i pomocou AFM.

27.) Využitie biofonických nanotechnológií k štúdiu mechanizmov bunkovej smrti s cieľom zvýšenia citlivosti detekcie a selektivity liečby nádorov.
(Towards increased sensitivity of cancer detection and selectivity of cancer treatment: biophotonic nanotechnology applications.)

Zodpovedný riešiteľ:	**Pavol Miškovský**
Zodpovedný riešiteľ v organizácii SAV:	Juraj Kronek
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0242-11

Organizácia je koordinátorom projektu:	nie
Koordinátor:	Prírodovedecká fakulta UPJŠ Košice
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 6302 €

Dosiahnuté výsledky:

Príprava amfifilných kopolymérov obsahujúce cholesterolovú a stearovú jednotku.

Výstupy:

1. KRONEK, Juraj - KRONEKOVÁ, Zuzana - *MIKULEC, Marcel* - ZAHORANOVÁ, Anna - PETRENČÍKOVÁ, Nadežda - ŠRAMKOVÁ, Petra - PAULOVIČOVÁ, E. - PAULOVIČOVÁ, L. Polymers based on unsaturated 2-oxazolines as building blocks for biomedical materials. 2nd Annual Conference of International Society for Biomedical Polymers and Polymeric Biomaterials (ISBPPB), Orlando, FA, USA,júl 2015, USB memory stick, IL-03

28.) MEREDIT: Materiály a procesy pre funkčnú enkapsuláciu pankreatických ostrovčekov v liečbe diabetu.
(MEDERIT: Materials and processes for functional encapsulation of pancreatic islets in diabetes treatment.)

Zodpovedný riešiteľ:	Igor Lacík
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0858
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	APVV: 20 362,00 €

Dosiahnuté výsledky:

Zavedenie nových metodík charakterizácie mikrokapsúl (konfokálna Ramanova mikroskopia, cryo-SEM). Nový spôsob prípravy PMCG mikrokapsúl.

29.) Nanoštruktúrne materiály pre senzoriku.
(Nanostructured materials for sensorics.)

Zodpovedný riešiteľ:	Peter Lobotka
Zodpovedný riešiteľ v organizácii SAV:	Matej Mičušík
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0593-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 15607 €

Dosiahnuté výsledky:

Pokúšali sme sa optimalizovať nanášanie nanokoloidov iónovej kvapaliny (IL) s Cu-Mn nanočasticami metódou Layer-by-layer. Bohužiaľ sa nám zatiaľ nepodarilo úspešne reprodukovať

naše prvé úspešné pokusy. Navyše po ca roku dochádzalo aj k čiastočnej oxidácii medi v IL, čo nám dosť narušilo náš koncept naniesť kovové nanočastice na detekčné zlaté elektródy pre potenciálne neenzymatické senzory glukózy. Skúšali sme aj iné IL než len našu pôvodnú EMIMBF4, no bez výraznejšieho úspechu. Začali sme aj nanášanie na ploché elektródy, ktoré by sa dali potom použiť ako sensory na báze Surface Plasmon Resonance. V tejto práci ešte budeme pokračovať, napriek tomu, že projekt tento rok končí.
Popritom sme uzavreli štúdiu ohľadne starnutia chemicky pripraveného polypyrolu (PPy) pomocou XPS metódy, ktorá bola prijatá a opublikovaná v časopise Polymer Degradation and Stability. Úspešne sa uzavrela práca ohľadne prípravy senzorických materiálov na báze elastomérnych kompozitov s uhlíkatými vodivými plnivami. Časť s kompozitmi na báze styrén-butadiénového kaučuku (SBR) plneného s uhlíkovými nanotrubičkami (CNT) a sadzami (CB) bola prijatá do časopisu Macromolecular Chemistry and Physics. Druhá časť venovaná kompozitom na báze kopolymérov styrén-izoprén-styrén, styrén-etylén/butylén-styrén s maleinanhydridom (SEBS-MA) a SEBS-MA modifikovaný polyetylén glykolom plnených CNT a ich senzorickej odozve na rôzne rozpúšťadlá sa práve spisuje na zaslanie do CC časopisu.

Výstupy:

1. TABAČIAROVÁ, Jana - MIČUŠÍK, Matej - FEDORKO, P. - OMASTOVÁ, Mária. Study of polypyrrole aging by XPS, FTIR and conductivity measurements. In Polymer Degradation and Stability, 2015, vol. 120, p. 392-401. (3.163 - IF2014). (2015 - Current Contents). ISSN 0141-3910.
2. TABAČIAROVÁ, Jana - *KRAJČI, Juraj* - PIONTECK, J. - REUTER, U. – OMASTOVÁ, Mária - MIČUŠÍK, Matej. Styrene butadiene rubber/carbon filler-based vapor sensors. In Macromolecular Chemistry and Physics, 2015, DOI: 10.1002/macp.201500298, (2.616 - IF2014). (2015 - Current Contents).

30.) GONanoplatform: Grafénová nanoplatforma na detekciu rakoviny.

(Graphene-based nanoplatform for detection of cancer.)

Zodpovedný riešiteľ:	Mária Omastová
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0120
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 9 044,00 €

Dosiahnuté výsledky:

Pripravili sa grafén oxidové (GO) častice chemickou oxidačnou exfoliáciou grafitu. Veľkosť vločiek oxidu grafénu závisí na veľkosti zŕn východiskového grafitového zdroja. Pripravený GO bol čiastočne redukovaný, aby sa získal materiál s rôznou úrovňou funkčných skupín na povrchu. Základná charakteristika GO a RGO, pokiaľ ide o stupeň oxidácie, exfoliácie a veľkosti nanočastíc sa študovala pomocou malouhlového rozptylu röntgenového žiarenia (SAXS) a XPS metódou. Superparamagnetické nanočastice (MNPS) s priemerom 10 nm boli pripravené vo vodnom roztoku. Na povrch týchto častíc sa aplikovali aminokyseliny ako lyzín, ktoré sú schopné reagovať s GO. Monoklonálne protilátky (MAb), najmä získané z média hybridómových buniek sú proteíny, a preto majú voľné NH2 a COOH skupiny. Skupina COOH bude použitá na naviazanie na GO.

Výstupy:

1. OMASTOVÁ, Mária - ŠPITALSKÝ, Zdenko - ŠIFFALOVIČ, P. - KONERACKÁ, M. - PASTOREKOVÁ, S. Surface modification of carbon nanostructures for advanced application. In The Košice, 26.-28.10.2015. - Košice : NFA, 2015, p. 59. ISBN 978-80-8152-312-0.

31.) Karbonická anhydráza IX ako funkčný komponent nádorovej progresie: úloha v epitelovo - mezenchýmovej tranzícii a v prenose medzibunkových signálov.
(Carbonic anhydrase IX as a functional component of cancer progression: the role in epithelial-mesenchymal transition and intercellular signaling.)

Zodpovedný riešiteľ:	Silvia Pastoreková
Zodpovedný riešiteľ v organizácii SAV:	Igor Lacík
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0658-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 23537 €

Dosiahnuté výsledky:

Odoslal sa článok, ktorého princípom je kontrolované uvoľňovanie protilátky voči karbonickej anhydráze CA-IX. Pokračovalo sa v charakterizovaní podmienok, ktoré podmieňujú prípravu koloidne stabilných chitozánových submikrónových častíc ako potenciálnych ďalších nosičov pre protilátky pre CA-IX. Bol pripravený koncept článku, ktorý sa podrobne venuje tejto tematike a v ktorom sme poukázali na chýbajúce poznanie v literatúre. Identifikovali sme najzásadnejšie faktory vplývajúce na samotný process sieťovania, ktoré sú v dostupnej literatúre takmer nepopísané, prípadne ich interpretácia je nekorektná.

Výstupy:

1. TAKÁČOVÁ, M - HLOUŠKOVÁ, Gabriela - ZAŤOVIČOVÁ, M. - BENEJ, M. – SEDLÁKOVÁ, O. - KOPÁČEK, J. - PASTOREK, J. - LACÍK, Igor – PASTOREKOVÁ, S. Encapsulation of anti-carbonic anhydrase IX antibody in hydrogel microspheres for tumor targeting. Eur. J. Pharm. Biopharm., v posudzovaní
2. VNUKOVÁ, Dominika – RÁZGA, Filip – NÉMETHOVÁ, Veronika – MORAVČÍKOVÁ, Daniela – LACÍK, Igor. Preparation of stable chitosan sub-micron particles: Factors affecting their size and colloidal stability. 79th Prague Meeting on Macromolecules; Functional polymers at bio-material interfaces 2015, 28 June – 02 July, Prague, Czech Republic, Book of Abstracts, p. 58 (vyveska)

32.) NANOSIMKA: Účinok nanoenkapsulovaného simvastatínu na kardiovaskulárny systém pri experimentálnom metabolickom syndróme.
(Effects of nanoencapsulated simvastatin on cardiovascular system in experimental metabolic syndrome.)

Zodpovedný riešiteľ:	Oľga Pecháňová
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Mosnáček
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0932
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Ústav normálnej a patologickej fyziológie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 3930 €

Dosiahnuté výsledky:

V rámci projektu sme sa zamerali na prípravu nanočastíc zapuzdrením kurkumínu. Na puzdro bol použitý syntetizovaný kopolymér N-isopropylakrylamidu (NIPAAM), N-vinyl-2-pyrolidónu (VP) a poly(etylénglykol)monometakrylát (PEG360) alebo poly(etylénglykol) monoakrylát (PEG2000). Kopolymerizácia sa uskutočnila voľnoradikálovou polymerizáciou za vzniku zosieťovaných micelárnych agregátov. Optimalizovalo sa zloženie a postup prípravy na získanie nanočastíc s reprodukovateľnou veľkosťou a distribúciou. Následne sa študovala i stabilita pripravených nanočastíc v kyslom prostredí a rýchlosť uvoľňovania kurkumínu z nanočastíc. Následne sa tento typ nanočastíc použije na enkapsuláciu simvastatínu a jeho uvoľňovanie in vitro a in vivo.

33.) PLAZTEXNANO: Výskum vplyvu nízkoteplotnej plazmy na zvýšenie povrchovej permanentnosti úpravy textilných materiálov s použitím nanosólov.
(Research of the impact of low temperature PLASma on increase the surface treatment permanence of TEXtile materials using NANOsols.)

Zodpovedný riešiteľ:	Zdenko Špitálsky
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0518
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav polymérov SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 35 000,00 €

Dosiahnuté výsledky:

Použitím nízkoteplotnej plazmy sme sledovali generovanie a stabilitu vzniknutých radikálov na povrchu polyesterovej textílie. Na charakterizáciu aktivovaného povrchu sa použila UV spektroskopia, XPS analýza, nanoindentácia, chemiluminiscencia a FTIR spektroskopia. Bolo potvrdené, že koncentrácia vznikajúcich radikálov na povrchu textílie rastie s rastúcim výkonom použitej plazmy, pričom radikály exponenciálne zanikajú s časom.

34.) Príprava nanoštrukturovaných filmov, ich integrácia s biorozpoznávacími elementami a ich následné využitie.
(Preparation of nanostructured interphases, their integration with bioelements and subsequent use.)

Zodpovedný riešiteľ:	Ján Tkáč
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Mosnáček
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0282-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Chemický ústav SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 4243 €

Dosiahnuté výsledky:

V rámci projektu sa viackrokovou syntézou pripravili sulfobetaíny obsahujúce tiolovú skupinu, ktorou sa následne naviažu na zlaté povrchy.

Programy: Štrukturálne fondy EÚ Výskum a vývoj

35.) Výskum aplikačného potenciálu obnovitelných a recyklovaných materiálov a informačných technológií v gumárenskom priemysle.
(Research on application potential of renewable and recycled materials and information technologies in rubber industry.)

Zodpovedný riešiteľ:	Jozef Preťo
Zodpovedný riešiteľ v Organizácii SAV:	Ivan Chodák
Trvanie projektu:	1.7.2012 / 31.5.2015
Evidenčné číslo projektu:	828524, kód výzvy OPVaV-2011/2.2/07-SORO
Organizácia je koordinátorom projektu:	nie
Koordinátor:	VIPO a.s., Partizánske
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	32 054,25 €

Dosiahnuté výsledky:

Najdôležitejším výsledkom dosiahnutým na pracovisku spoluriešiteľa ÚPo SAV bolo vyvinutie a verifikácia komplexného postupu analýzy gumovej drviny z neznámeho zdroja. Pre tento cieľ sa použili metódy DMTA a TGA pre stanovenie kvality kaučukovej matrice a to aj pre zmesné receptúry založené na viacerých kaučukoch. Metóda TGA sa ďalej využila pre stanovenie obsahu sadzí a anorganických neuhlíkových plnív, keďže sa jednoznačne preukázalo, že tieto dve zložky možno odlíšiť porovnaním priebehov TGA v inertnej atmosfére (argón) a v kyslíku. Výsledky sa prezentovali na viacerých konferenciách a v publikácii zaslanej do Chemical papers, pričom sa pripravuje ešte jedna publikácia.

Výstupy:

1. PODHRADSKÁ, Silvia - OMASTOVÁ, Mária - CHODÁK, Ivan. Effect of uniaxial deformation and relaxation of rubber-carbon black composites on their electrical properties. In KGK - Kautschuk Gummi Kunstoffe, 2015, vol. 68, no. 5, p. 45-51. (0.212 - IF2014). ISSN 0948-3276.
2. HRONKOVIČ, J. - PREŤO, J. - ORAVEC, J. - VEREŠ, J. - CHODÁK, Ivan. The appropriate composition to modify rubber crumb and its application in rubber compounds. In PMA 2015 & SRC 2015 : book of proceedings. - Bratislava : STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 196-199. ISBN 978-80-970923-7-5.
3. HRONKOVIČ, J. - PREŤO, J. - VANKO, V. - HUDEC, I. - CHODÁK, Ivan. Antioxidant effect of lignosulfonate in sidewall rubber compound. In PMA 2015 & SRC 2015 : book of proceedings. - Bratislava : STU, Faculty of Chemical and Food Technology & Polymer Institute of SAS, 2015, p. 193-195. ISBN 978-80-970923-7-5.

Programy: Centrá excelentnosti SAV

36.) Centrum Excelentnosti pre Funkcionalizované viacfázové materiály – FUN-MAT.
(Center of Excellence for Functionalized Multiphase Materials – FUN-MAT.)

Zodpovedný riešiteľ:	Marián Krajčí
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Mosnáček
Trvanie projektu:	1.8.2011 / 31.7.2015
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie

Koordinátor: Fyzikálny ústav SAV
Počet spoluriešiteľských inštitúcií: 5 - Slovensko: 5
Čerpané financie:

Dosiahnuté výsledky:

V rámci projektu s modifikovali rôzne typy nanočastíc pomocou z povrchu iniciovanej radikálovej polymerizácie s prenosom atómu (SI ATRP) za účelom prípravy nových funkčných materiálov z požadovanými vlastnosťami. Uhlíkové nanotrubičky sa modifikovali blokovými kopolymérmi za účelom zýšenia kompatibility s elastomérnou matricou a zavedenia fotoaktuujúcich vlastností. GO častice sa modifikovali SI ATRP, pričom dochádzalo k súčasnej in situ redukcii GO. Hlbšou štúdiou sa ukázalo že za redukciu je zodpovedný terciárny amín – PMDETA, ktorý sa používa na komplexáciu kovového katalyzátora pri ATRP.Túto metódu možno použiť na kontrolovanú redukciu GO, za účelom kontroly vodivosti. Častice karbonylového železa sa taktiež modifikovali pomocou SI ATRP za účelom potlačenia sedimentácie v magnetoreologických suspenziách. Zároveň modifikácia viedli i k zvýšeniu stability CI častíc voči oxidácii. V rámci projektu sa taktiež vyvinula metóda fotochemicky indukovanej ATRP aplikovateľnej pri nízkej koncentrácii kyslíka. Jej výhoda je z technologického hľadiska, kedy nie je potrebné odstraňovať vzduch z polymerizačnej zmesi, prítomný kyslík sa in situ spotrebuje bez výraznejsšieho vplyvu na kontrolu molekulových charakteristík polymérov a živosť koncov polymérnych reťazcov.

Výstupy:

1. ILČÍKOVÁ, Markéta - MRLÍK, Miroslav - MOSNÁČEK, Jaroslav. Chapter 6: Thermoplastic elastomers with photoactuating properties. Thermoplastic Elastomers - Synthesis and Applications. InTech d.o.o, Rijeka, Croatia. Edited by Chapal Kumar Das, ISBN 978-953-51-2223-4, 176 pages, Publisher: InTech, Chapters published November 26, 2015 under CC BY 3.0 license.
2. CVEK, M. - MRLÍK, M. - ILČÍKOVÁ, Markéta - PLACHY, T. - SEDLAČIK, M. - MOSNÁČEK, Jaroslav - PAVLINEK, V. A facile controllable coating of carbonyl iron particles with poly(glycidyl methacrylate): a tool for adjusting MR response and stability properties. In Journal of Materials Chemistry C, 2015, vol. 3, p. 4646-4656. (4.696 - IF2014). (2015 - Current Contents, SCI). ISSN 2050-7526.
3. CVEK, M. - MRLÍK, M. - ILČÍKOVÁ, Markéta - MOSNÁČEK, Jaroslav - BABAYAN, V. - KUCEKOVÁ, Z. - HUMPOLÍČEK, P. - PAVLÍNEK, V. The chemical stability and cytotoxicity of carbonyl iron particles grafted with poly(glycidyl methacrylate) and the magnetorheological activity of their suspensions. In RSC Advances, 2015, vol. 5, p. 72816-72824. (3.840 - IF2014). ISSN 2046-2069.
4. ILČÍKOVÁ, Markéta – MRLÍK, M. - SEDLÁČEK, T. - DOROSHENKO, M. - KOYNOV, K. - DANKO, Martin - MOSNÁČEK, Jaroslav. Tailoring of viscoelastic properties and light-induced actuation performance of triblock copolymer composites through surface modification of carbon nanotubes. Polymer, 2015, 72, 368-377. doi:10.1016/j.polymer.2015.03.060
5. KÓSA, Csaba - SEDLAČÍK, M. - FIEDLEROVÁ, Agnesa - CHMELA, Štefan - BORSKÁ, Katarína - MOSNÁČEK, Jaroslav. Photochemically cross-linked poly(epsilon-caprolactone) with accelerated hydrolytic degradation. In European Polymer Journal, 2015, vol. 68, p. 601-608. (3.005 - IF2014). ISSN 0014-3057.
6. MOSNÁČEK, Jaroslav - ECKSTEIN-ANDICSOVÁ, Anita - BORSKÁ, Katarína. Ligand effect and oxygen tolerance studies in photochemically induced copper mediated reversible deactivation radical polymerization of methyl methacrylate in dimethyl sulfoxide. In Polymer Chemistry, 2015, vol. 6, p. 2523-2530. (5.520 - IF2014). ISSN 1759-9954.
7. ILČÍKOVÁ, Markéta - MRLÍK, M. - ŠPITALSKÝ, Zdenko - MIČUŠÍK, Matej - CSOMOROVÁ, Katarína - SASINKOVÁ, V. - KLEINOVÁ, Angela - MOSNÁČEK, Jaroslav. A tertiary amine in two competitive processes: Reduction of graphene oxide vs. catalysis of atom transfer radical polymerization. In RSC Advances, 2015, vol. 5, p. 3370-3376. (3.840 - IF2014). ISSN 2046-2069.

Programy: Iné projekty

37.) Centrum aplikovaného výskumu nových materiálov a transferu technológií.

(Centre for applied research of new materials and technology transfer.)

Zodpovedný riešiteľ:	Pavol Šajgalík
Zodpovedný riešiteľ v organizácii SAV:	Mária Omastová
Trvanie projektu:	1.9.2013 / 31.8.2015
Evidenčné číslo projektu:	kód ITMS projektu 262 402 200 88
Organizácia je koordinátorom projektu:	nie
Koordinátor:	P SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	P SAV: 39070 €

Dosiahnuté výsledky:

Laboratórium využitia nanomateriálov sa zameralo na výskum a vývoj nanočastíc a nanočasticových súborov a na výskum a vývoj nanokompozitov. V rámci pripravovaného projektu UPo SAV pripravilo elektrostatickým zvlákňovaním nanoštrukturované polymérne materiály, ktoré sa počas alebo po príprave modifikovali vodivým polymérom polypyrolom. Pripravila sa séria polymérnych kompozitov a nanokompozitov, ktoré sa testovali ako senzory plynov.

Výstupy:

1. OMASTOVÁ, Mária - MIČUŠÍK, Matej - MOSNÁČKOVÁ, Katarína. Conductive textiles modified by polypyrrole. In 6th International Technical Textile Congress. - Izmir, Turkey : Dokuz Eylul University, 2015, p. 185-188. ISBN 978-975-441-448-6.

Príloha C

Publikačná činnosť organizácie (*generovaná z ARL*)

AAA Vedecké monografie vydané v zahraničných vydavateľstvách

AAA01 RÁZGA, Filip. Structure and dynamics of rRNA: A computational study : Kirk-turn motif as a flexible molecular hinge. Saarbrucken, Germany : Scholar´s Press, 2015, 157 P. ISBN 978-3-639-76604-2.

ABC Kapitoly vo vedeckých monografiách vydané v zahraničných vydavateľstvách

ABC01 ILČÍKOVÁ, Markéta - MRLÍK, M. - MOSNÁČEK, Jaroslav. Thermoplastic elastomers with photo-actuating properties. Edited by Chapal Kumar Das. In Thermoplastic elastomers - synthesis and applications. - Rijeka, Croatia : InTech, 2015, chapter. 6, P. 115-143. ISBN 978-953-51-2223-4. Dostupné na internete: <http://dx.doi.org/10.5772/59647>.

ABC02 ROLLET, M. - PELLETIER, B. - BEREK, Dušan - MARIA, S. - PHAN, T. N. T. - GIGMES, D.Separation of parent homopolymers from poly(ethylene oxide) and polystyrene based block copolymers by liquid chromatography under limiting conditions of desorption. 2. Studies of samples obtained from ATRP and NMP. In Controlled radical polymerization : Materials. - Washington, US : American Chemical Society, May 1, 2015, aCS Symposium Series, vol. 1188, chapter 20, P. 327-347. ISBN 9780841230514.

ABC03 WINTER, A. D. - LARIOS, E. - JAYE, Ch. - OMASTOVÁ, Mária - FISCHER, D. A. - CAMPO, E. M. Noncovalent interactions in polymer nanocomposites. In New horizons in nanoscience and engineering. - SPIE, 31 July 2015, chapter 4, p. 147-190. ISBN 9781628417951.

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ADCA01 BENEDETTI, F. - JAPARIDZE, A. - DORIER, J. - RAČKO, Dušan - KWAPICH, R. - BURNIER, Y. - DIETLER, G. - STASIAK, A. Effects of physiological self-crowding of DNA on shape and biological properties of DNA molecules with various levels of supercoiling. In Nucleic acids research, 2015, vol. 43, no. 4, p. 2390-2399. (9.112 - IF2014). (2015 - Current Contents). ISSN 0305-1048.

ADCA02 BENKOVÁ, Zuzana - CORDEIRO, M. N. D. S. Molecular dynamics simulations of poly(ethylene oxide) grafted onto silica immersed in melt of homopolymers. In Langmuir, 2015, vol. 31, p. 10254-10264. (4.457 - IF2014). (2015 - Current Contents). ISSN 0743-7463.

ADCA03 BENKOVÁ, Zuzana - NÁMER, Pavol - CIFRA, Peter. Stripe to slab confinement for the linearization of macromolecules in nanochannels. In Soft Matter, 2015, vol. 11, p. 2279-2289. (4.029 - IF2014). (2015 - Current Contents). ISSN 1744-683X.

ADCA04 BEREK, Dušan - MACOVÁ, Eva. Liquid chromatography under limiting conditions of desorption 6: Separation of a four-component polymer blend. In Journal of Separation Science, 2015, vol. 38, p. 543-549. (2.737 - IF2014). (2015 - Current Contents). ISSN 1615-9306.

ADCA05 BOČA, M. - RAKHMATULLIN, A. - MLYNÁRIKOVÁ, J. - HADZIMOVÁ, E. - VASKOVÁ, Z. - MIČUŠÍK, Matej. Differences in XPS and solid state NMR spectral data and thermo-chemical properties of iso-structural compounds in the

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ADEB03 NOVÁK, Igor - *FLORIÁN, Štepán*. Investigation of hydrophilicity of polyethylene modofied by electric discharge in the course of aging. In Journal of Materials Science Letters, 2001, vol. 20, p. 1289-1291. (0.496 - IF2000). ISSN 0261-8028.

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ADEB04 POWERS, A. C. - BRIŠŠOVÁ, M. - LACÍK, Igor - ANILKUMAR, A. V. - SHAHROKHI, K. - WANG, T. G. Permeability assessment of capsules for islet

transplantation : Bioartificial organs. In Annals of The New York Academy of Sciences, 1997, vol. 831, p. 208 - 216. ISSN 0077-8923.

Citácie:

1. [1.1] SCHARP, D.W. - MARCHETTI, P. Encapsulated islets for diabetes therapy: History, current progress, and critical issues requiring solution. In ADVANCED DRUG DELIVERY REVIEWS. ISSN 0169-409X, APR 10 2014, vol. 67-68, p. 35-73., WOS

2. [1.1] SPASOJEVIC, M. - BHUJBAL, S. - PAREDES, G. - DE HAAN, B.J. - SCHOUTEN, A.J. - DE VOS, P. Considerations in binding diblock copolymers on hydrophilic alginate beads for providing an immunoprotective membrane. In JOURNAL OF BIOMEDICAL MATERIALS RESEARCH PART A. ISSN 1549-3296, JUN 2014, vol. 102, no. 6, p. 1887-1896., WOS

ADEB05 RAHEL, J. - ČERNÁK, M. - HUDEC, I. - ŠTEFEČKA, M. - KANDO, M. - CHODÁK, Ivan. Surface modification of polyester monofilaments by atmospheric-pressure nitrogen plasma. In Plasmas and Polymers, 2000, vol. 5, no. 3 - 4, p. 119 - 127.

Citácie:

1. [1.2] KUSANO, Y. Atmospheric pressure plasma processing for polymer adhesion: A review. (2014) Journal of Adhesion, 90 (9), p. 755-777.DOI: 10.1080/00218464.2013.804407, Scopus

ADEB06 SANTANAKRISHNAN, S. - HUTCHINSON, R. A. - UHELSKÁ, Lucia - *STACH, Marek* - LACÍK, Igor - BUBACK, M.Polymerization kinetics of water-soluble N-vinyl monomers in aqueous and organic solution. In Macromolecular Symposia, 2011, vol. 302, p. 216 - 223. ISSN 1022-1360.

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1. [1.1] BARTOSZEK, N. - SAWICKI, P. - KADLUBOWSKI, S. - ULANSKI, P. - ROSIAK, J.M. Determination of propagation rate coefficient for the polymerization of N-vinylpyrrolidone in aqueous solution by pulsed electron polymerization and size exclusion chromatography. In ACS MACRO LETTERS. ISSN 2161-1653, JUL 2014, vol. 3, no. 7, p. 639-642., WOS

ADEB07 ŠOLTÉS, L. - SÉBILLE, B. - TILLEMENT, J. P. - BEREK, Dušan. Study of bilirubin binding in human serum by high-performance liquid chromatography. In Journal of clinical chemistry and clinical biochemistry : Zeitschrift für klinische Chemie und klinische Biochemie, 1989, vol. 27, no. 12, p. 935-939. ISSN 0340-076X.

Citácie:

1. [1.2] HANAI, T. Quantitative in silico chromatography: Computational modelling of molecular interactions. In RSC CHROMATOGRAPHY MONOGRAPHS. ISSN 17577055, 2014, vol. 2014, no. 19, p. 1-353., SCOPUS

ADFA Vedecké práce v ostatných domácich časopisoch impaktovaných

ADFA01 HURAN, J.- VALOVIČ, A. - KUČERA, M. - KLEINOVÁ, Angela - KOVÁČOVÁ, E. - BOHÁČEK, P. - SEKÁČOVÁ, M. Hydrogenated amorphous silicon carbon nitride films prepared by PECVD technology: properties. In Journal of Electrical Engineering, 2012, vol. 65, p. 333-335. (0.370 - IF2011). (2012 - INSPEC, SCOPUS). ISSN 1335-3632.

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1. [1.1] IVASHCHENKO, V.I. - KOZAK, A.O. - PORADA, O.K. - IVASHCHENKO, L.A. - SINELNICHENKO, O.K. - LYTVYN, O.S. - TOMILA, T.V. - MALAKHOV, V.J. Characterization of SiCN thin films: Experimental and theoretical investigations. In THIN SOLID FILMS. OCT 31 2014, vol. 569, p. 57-

63., WOS
2. [1.2] Kozak, A.O., Ivashchenko, V.I., Porada, O.K., Ivashchenko, L.A., Tomila, T.V.: Journal of Nano- and Electronic Physics 6 (2014), 04047, SCOPUS

***AEC Vedecké práce v zahraničných recenzovaných vedeckých zborníkoch (aj konferenčných), monografiách**

AEC01 CAMPO, E. M. - ROIG, J. - ROEDER, B. - WENN, D. - MAMOJKA, B. - OMASTOVÁ, Mária - TERENTJEV, E. M. - ESTEVE, J. Nano opto-mechanical systems NOMS as a proposal for tactile displays. In Nano-Opto-Mechanical Systems (NOMS) : Proceedings of SPIE. - Bellingham, USA : SPIE - Int. Soc. Opt. Engineering, 2011, vol. 8107, art.n. 8107OH - p.1-10. ISBN 978-0-81948-717-9. ISSN 0277-786X.

Citácie:
1. [1.1] GARCIA-AMOROS, J. - MARTINEZ, M. - FINKELMANN, H. - VELASCO, D. Photoactuation and thermal isomerisation mechanism of cyanoazobenzene-based liquid crystal elastomers. In PHYSICAL CHEMISTRY CHEMICAL PHYSICS. ISSN 1463-9076, 2014, vol. 16, no. 18, p. 8448-8454., WOS

AECA Vedecké práce v zahraničných recenzovaných zborníkoch a kratšie kapitoly / state v zahraničných vedeckých monografiách alebo vysokoškolských učebniciach

AECA01 MATISOVÁ- RYCHLÁ, Lýdia - RYCHLÝ, Jozef. Inherent relations of chemiluminescence and thermooxidation of polymers. In Advances in Chemistry Series : Polymer Durability, Degradation, Stabilization, and Liftime Prediction, 1996, vol. 249, p. 175 - 193. ISBN 0-8412-3134-6. ISSN 0065-2393.

Citácie:
1. [1.1] LUNGULESCU, M.E. - ZAHARESCU, T. - PLESA, I. - PODINA, C. Thermal and radiation stability of polyolefins modified with silica nanoparticles. In JOURNAL OF OPTOELECTRONICS AND ADVANCED MATERIALS. ISSN 1454-4164, MAY-JUN 2014, vol. 16, no. 5-6, p. 719-725., WOS

***AFHA Abstrakty príspevkov z medzinárodných vedeckých konferenciách poriadaných v SR**

AFHA01 BAŇASOVÁ, Mária - VALACHOVÁ, K. - RYCHLÝ, Jozef - PRIESOLOVÁ, E. - NAGY, M. - JURÁNEK, I. - ŠOLTÉS, L. Scavening and chain-breaking activity of bucillamine on free-radical-mediated degradation of high-molar-mass hyaluronan. In ChemZi : slovenský časopis o chémii pre chemické vzdelávanie, výskum a priemysel, 2011, roč. 7, č.13, s. 205-206. ISSN 1336-7242. VEGA 2/0083/09, VEGA 2/0011/11, VEGA 2/0081/11.

Citácie:
1. [3] OMER, A.M. - TAMER, M. T. - MOHYELDIN, M.S. High-molecular weight of biopolymer. In SCIENCE JOURNAL OF VOLGOGRAD STATE UNIVERSITY : TECHNOLOGY AND INNOVATIONS. ISSN 2305-7815, 2014, vol. 12, no. 3, p. 56-70

Príloha D

Údaje o pedagogickej činnosti organizácie

Semestrálne prednášky:

Prof., RNDr. Ignác Capek, DrSc.
Názov semestr. predmetu: Technológia prípravy materiálov
Počet hodín za semester: 20
Názov katedry a vysokej školy: Trenčianska univerzita Alexandra Dubčeka v Trenčíne, Fakulta priemyselných technológií

RNDr. Peter Cifra, DrSc.
Názov semestr. predmetu: Makromolekulová chémia
Počet hodín za semester: 20
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, 4-5 ročník

Mgr. Juraj Kronek, PhD.
Názov semestr. predmetu: Makromolekulová chémia
Počet hodín za semester: 6
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, 4. ročník

Ing. Igor Lacík, DrSc.
Názov semestr. predmetu: Makromolekulová chémia
Počet hodín za semester: 30
Názov katedry a vysokej školy: Jan Dlugos University Czestochowa, Poľsko

Semestrálne cvičenia:

Mgr. Pavol Námer
Názov semestr. predmetu: cvičenia z fyziky
Počet hodín za semester: 84
Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, pre študentov 1. ročníka

Semináre:

Prof. Ing. Ivan Chodák, DrSc.
Názov semestr. predmetu: Fyzika polymérov – Mechanické vlastnosti
Počet hodín za semester: 2
Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, semináre pre doktorandov

Prof. Ing. Ivan Chodák, DrSc.
Názov semestr. predmetu: Príprava prednášky a prezentácia vedeckých výsledkov
Počet hodín za semester: 2
Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, semináre pre doktorandov

Terénne cvičenia:

Ing. Daniela Moravčíková, PhD.
Názov semestr. predmetu: fotoATRP MMA
Počet hodín za semester: 164
Názov katedry a vysokej školy: Univerzita Komenského v Bratislave, vedenie študentky - 2 mesačná letná prax

Ing. Daniela Moravčíková, PhD.
Názov semestr. predmetu: Syntéza a purifikácia morfolínových nukleozidov
Počet hodín za semester: 160
Názov katedry a vysokej školy: Univerzita Komenského v Bratislave, VPS

Individuálne prednášky:

Prof. Ing. Ivan Chodák, DrSc.
Názov semestr. predmetu: Makromolekulová chémia
Počet hodín za semester: 4
Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, pre doktorandov

Ing. Igor Novák, PhD.
Názov semestr. predmetu: Povrchová úprava dreva,
Počet hodín za semester: 2
Názov katedry a vysokej školy: Drevárska fakulta TUZVO, v rámci doktorandských študijných programov

Ing. Igor Novák, PhD.
Názov semestr. predmetu: Povrchové vlastnosti polymérnych a kovových materiálov
Počet hodín za semester: 2
Názov katedry a vysokej školy: Materiálovotechnologická fakulta STU v Trnave, pre 4. ročník štúdia

Ing. Igor Novák, PhD.
Názov semestr. predmetu: Spájanie polymérnych a kovových materiálov lepením
Počet hodín za semester: 2
Názov katedry a vysokej školy: Materiálovotechnologická fakulta STU v Trnave, pre 4. ročník štúdia

Ing. Mária Omastová, DrSc.
Názov semestr. predmetu: Elektricky vodivé polymérne kompozity
Počet hodín za semester: 2
Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, pre doktorandov (1. ročník) - odbor Makromolekulová chémia

Mgr. Zdenko Špitálsky, PhD.
Názov semestr. predmetu: Elektricky vodivé polymérne kompozity
Počet hodín za semester: 2
Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, pre doktorandov - odbor Makromolekulová chémia

Príloha E

Medzinárodná mobilita organizácie

(A) Vyslanie vedeckých pracovníkov do zahraničia na základe dohôd:

Krajina	**D r u h d o h o d y**					
	MAD, KD, VTS		**Medziústavná**		**Ostatné**	
	Meno pracovníka	**Počet dní**	**Meno pracovníka**	**Počet dní**	**Meno pracovníka**	**Počet dní**
Česko	Nikola Bugárová	3	Rastislav Baran	6	Eliška Číková	1
	Ivica Janigová	3	Juraj Kronek	1	Ivan Chodák	1
			Juraj Kronek	5	Ivan Chodák	1
			Juraj Kronek	2	Igor Lacík	1
			Peter Palenčár	91	Igor Lacík	1
			Petra Šrámková	4	Veronika Némethová	2
			Anna Zahoranová	12	Mária Omastová	1
					Filip Rázga	1
					Filip Rázga	1
					Filip Rázga	1
					Alena Šišková	2
					Dominika Vnuková	2
Francúzsko			Klaudia Czaniková	6		
			Ivan Chodák	3		
			Matej Mičušík	6		
			Mária Omastová	7		
Katar			Martin Danko	30		
			Markéta Ilčíková	227		
			Peter Kasák	334		
			Igor Krupa	243		
			Jaroslav Mosnáček	30		
			Zdenko Špitálsky	9		
Lichtenštajsko					Štefan Chmela	3
Litva			Mária Omastová	4		
Nemecko			Josef Bartoš	28		
			Ignác Capek	9		
			Ignác Capek	14		
			Jaroslav Kuliček	19		
			Miroslava Lukešová	28		
			Miroslava Lukešová	27		
			Pavol Námer	7		
			Mária Omastová	4		
			Helena Švajdlenková	91		
			Helena Švajdlenková	28		
			Anna Zahoranová	183		
Poľsko	Martin Danko	4	Juraj Kronek	5		

	Slávka Ďurkáčová	12	Igor Lacík	12		
	Jaroslav Mosnáček	4	Igor Lacík	5		
Portugalsko			Zuzana Benková	30		
Rakúsko					Katarína Borská	1
					Katarína Borská	1
					Katarína Borská	1
					Ivan Chodák	1
					Matej Mičušík	1
					Katarína Mosnáčková	1
					Mária Omastová	1
					Helena Švajdlenková	1
					Helena Švajdlenková	1
					Helena Švajdlenková	1
Rumunsko			Alena Šišková	4		
Srbsko			Nikola Bugárová	5		
			Jaroslav Kuliček	7		
Španielsko			Josef Bartoš	30		
			Helena Švajdlenková	30		
Švajčiarsko			Dušan Račko	365		
Taiwan			Daniela Moravčíková	9		
			Jaroslav Mosnáček	9		
Taliansko					Igor Lacík	2
Turecko			Eliška Číková	4		
			Jaroslav Kuliček	7		
			Alena Šišková	4		
USA			Igor Lacík	6		
			Igor Lacík	5		
			Lucia Uhelská	29		
Počet vyslaní spolu	**5**	**26**	**47**	**2024**	**24**	**30**

(B) Prijatie vedeckých pracovníkov zo zahraničia na základe dohôd:

Krajina	**D r u h d o h o d y**					
	MAD, KD, VTS		**Medziústavná**		**Ostatné**	
	Meno pracovníka	**Počet dní**	**Meno pracovníka**	**Počet dní**	**Meno pracovníka**	**Počet dní**
Belgicko			Stevens E.	14		
Česko	Stejskal J.	5	Cvek M.	30	Mrlík M.	130
	Trchová M.	5	Hanychová L.	2	Omelka L.	1
			Jelínková L.	7	Roda J.	1
			Nedbal J.	5	Stejskal J.	1
			Olejník R.	33		
			Pelka M.	5		
			Prokeš J.	4		
			Reddy P.R.	30		
			Shimoga G.D.	29		
			Stloukal P.	5		
			Stloukal P.	5		
			Tuba E.	30		
			Urbánek P.	30		
			Varga M.	4		
Francúzsko			Ben Sghaier A.	7		
			Ghehimi M.	7		
			Saad A.	7		
			Sghaier A	5		
Kanada					Rooney T.	30
Nemecko	Ehlers D.	14				
	Reuter D.	14				
Poľsko	Baško M.	5				
	Bochenek M.	5				
	Hertlein K.	5				
	Socka M.	5				
Rumunsko	Bele A.	7				
	Dascalu M.	7				
Rusko					Nikitin A.N.	61
Srbsko			Markovic B.T.	5		
			Markovic Z.	5		
Taliansko			Capasso U.	30		
Turecko			Cogal S.	7		
Ukrajina			Budniak M	4	Pidluzhna A.	270
			Grygorchak I.	3		
USA					Shipp D.A.	1
Veľká Británia			Stingelin N.	3		
Počet prijatí spolu	**10**	**72**	**26**	**316**	**8**	**495**

(C) Účasť pracovníkov pracoviska na konferenciách v zahraničí (nezahrnutých v "A"):

Krajina	Názov konferencie	Meno pracovníka	Počet dní
Austrália	IPITA-IXA-CTS 2015	Igor Lacík	11
Bulharsko	Challenges in Science and Technology of Polymer Ma	Alena Šišková	8
Česko	79th PMM Conference: Functional Polymers at Bio-Ma	Igor Lacík	5
		Daniela Moravčíková	5
		Veronika Némethová	5
		Filip Rázga	5
		Dominika Vnuková	5
	APROCHEM 2015	Igor Novák	2
	Biomacromolecular Ionic Systems	Peter Cifra	5
Dánsko	Thermodynamics 2015	Peter Cifra	6
Francúzsko	Eurofillers and Polymer Blends 2015	Ivan Chodák	5
		Jaroslav Kuliček	5
		Marta Malíková	5
		Mária Omastová	5
Nemecko	15th EPF Congress 2015	Ivica Janigová	6
		Zuzana Kroneková	6
		Mária Omastová	6
		Jozef Prachár	6
		Anna Zahoranová	5
	19th JCNS Laboratory Course Neutron Scattering	Miroslava Lukešová	14
	49th IFF Springschool 2015	Josef Bartoš	13
	Nanomechanical Testing Workshop & Hysitron User Me	Marian Valentin	4
	Würzburg Summer School on Supramolecular Nanosyste	Klaudia Czaniková	5
		Petra Šrámková	5
Poľsko	2nd I C on Wood Composites Modification and Machin	Igor Novák	4
	XXIXth I S C Wood – Material of the XXIst Century	Igor Novák	4
Portugalsko	ICCS18	Ivan Chodák	7
Rakúsko	DVS Polymer Meeting 2015	Igor Lacík	4
		Mária Omastová	4
		Marian Valentin	4
	(DVS) Polymer Meeting 2015	Anna Chovancová	4
	165. Österreichische Chemietage	Ivan Chodák	4
		Mária Omastová	5
	DVS Polymer Meeting 2015	Helena Švajdlenková	3
	XXVI. International EPR Seminar 2015	Josef Bartoš	3
		Helena Švajdlenková	3
Rumunsko	3rd CEEPN Workshop	Juraj Kronek	6
	3rd CEEPN Workshop on Polymer Science	Klaudia Czaniková	6
Srbsko	Electrospinning Workshop, MC meeting COST 1206	Eliška Číková	4
		Mária Omastová	4

Španielsko	16th E C on Applicatrion of Surface and Interface	Matej Mičušík	6
Taliansko	ESMI Meeting 2015	Helena Švajdlenková	4
	EUPOC 2015	Marta Malíková	5
	EUPOC 2015	Eliška Číková	5
		Jaroslav Kuliček	5
		Matej Mičušík	5
		Mária Omastová	5
	Frontiers in Polymer Science 2015	Klaudia Czaniková	5
Turecko	COST MP 1105 Workshop on Flame Retardancy Applicat	Mária Omastová	4
	I C on Advances in Composite Materials	Ivan Chodák	5
USA	ISBPPB´2nd Conference	Juraj Kronek	6
	SPIE Optics and Photonics for Sustainable Energy	Angela Kleinová	10
Veľká Británia	CCP5 Annual Meeting 2015	Zuzana Benková	4
Spolu	**33**	**53**	**285**

Vysvetlivky: MAD - medziakademické dohody, KD - kultúrne dohody, VTS - vedecko-technická spolupráca v rámci vládnych dohôd

Skratky použité v tabuľke C:

DVS Polymer Meeting 2015 - Danube Vltava Sava (DVS) Polymer Meeting 2015
ESMI Meeting 2015 - European Soft Matter Infrastructure (ESMI) Meeting 2015
EUPOC 2015 - Europolymer Conference 2015 - Conducting Polymeric Materials - (EUPOC 2015)
ICCS18 - 18th International Conference on Composite Structures ICCS18
(DVS) Polymer Meeting 2015 - Danube Vltava Sava (DVS) Polymer Meeting 2015
15th EPF Congress 2015 - 15th EPF Congress 2015
165. Österreichische Chemietage - 165. Österreichische Chemietage
16th E C on Applicatrion of Surface and Interface - 16th European Conference on Applicatrion of Surface and Interface Analysis ECASIA´15
19th JCNS Laboratory Course Neutron Scattering - 19th JCNS Laboratory Course Neutron Scattering
2nd I C on Wood Composites Modification and Machin - 2nd International Conference on Wood Composites Modification and Machining
3rd CEEPN Workshop - 3rd CEEPN Workshop
3rd CEEPN Workshop on Polymer Science - 3rd CEEPN Workshop on Polymer Science
49th IFF Springschool 2015 - 49th IFF Springschool 2015
79th PMM Conference: Functional Polymers at Bio-Ma - 79th PMM Conference: Functional Polymers at Bio-Material Interfaces
APROCHEM 2015 - APROCHEM 2015
Biomacromolecular Ionic Systems - Biomacromolecular Ionic Systems
CCP5 Annual Meeting 2015 - CCP5 Annual Meeting 2015 - Condensed Phase Simulations: Recent Advances in Theory and Applications
Challenges in Science and Technology of Polymer Ma - Challenges in Science and Technology of Polymer Materials
COST MP 1105 Workshop on Flame Retardancy Applicat - COST MP 1105 Workshop on Flame Retardancy Applications and Related Regulations for Protective Textiles
DVS Polymer Meeting 2015 - Danube Vltava Sava (DVS) Polymer Meeting 2015
Electrospinning Workshop, MC meeting COST 1206 - Electrospinning Workshop, MC meeting COST 1206
EUPOC 2015 - Europolymer Conference 2015 - Conducting Polymeric Materials –(EUPOC 2015)
EUPOC 2015 - Europolymer Conference 2015 - Conducting Polymeric Materials
EUPOC 2015 - Europolymer Conference 2015 - Conducting Polymeric Materials -(EUPOC 2015)
Eurofillers and Polymer Blends 2015 - Eurofillers and Polymer Blends 2015
Frontiers in Polymer Science 2015 - Frontiers in Polymer Science 2015
I C on Advances in Composite Materials - International Conference on Advances in Composite Materials
IPITA-IXA-CTS 2015 - IPITA-IXA-CTS 2015 Joint-Congress f the International Pancreas and Islet Transplant Association, the International Xenotransplantation Association and the Cell Transplant Society
ISBPPB´2nd Conference - ISBPPB´2nd Conference
Nanomechanical Testing Workshop & Hysitron User Me - Nanomechanical Testing Workshop & Hysitron User Meeting

SPIE Optics and Photonics for Sustainable Energy - SPIE Optics and Photonics for Sustainable Energy
Thermodynamics 2015 - Thermodynamics 2015
Würzburg Summer School on Supramolecular Nanosyste - Würzburg Summer School on Supramolecular Nanosystems
XXIXth I S C Wood – Material of the XXIst Century - XXIXth International Scientific Conference Wood – Material of the XXIst Century
XXVI. International EPR Seminar 2015 - XXVI. International EPR Seminar 2015