Ústav anorganickej chémie SAV

Správa o činnosti organizácie SAV
za rok 2015

Bratislava
január 2016

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1. Základné údaje o organizácii

1.1. Kontaktné údaje

Názov: Ústav anorganickej chémie SAV
Riaditeľ: doc. Ing. Miroslav Boča, PhD.
Zástupca riaditeľa: doc. Ing. Miroslav Hnatko, PhD.
Vedecký tajomník: doc. Ing. Zoltán Lenčéš, PhD.
Predseda vedeckej rady: RNDr. Jana Madejová, DrSc.
Člen snemu SAV: doc. Ing. Miroslav Hnatko, PhD.
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Názvy a adresy detašovaných pracovísk:

- **Vitrum Laugaricio - Centrum kompetencie skla, spoločné pracovisko ÚACH SAV, TnU AD, RONA, a.s. a FCHPT STU**
  Študentská 2, 911 50 Trenčín

Vedúci detašovaných pracovísk:

- **Vitrum Laugaricio - Centrum kompetencie skla, spoločné pracovisko ÚACH SAV, TnU AD, RONA, a.s. a FCHPT STU**
  prof. Ing. Dušan Galusek, DrSc.

Typ organizácie: Rozpočtová od roku 1953

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	75	39	36	7	10	66	65,49	51,63
Vedeckí pracovníci	48	33	15	6	4	40	38,43	38,43
Odborní pracovníci VŠ	14	4	10	1	6	14	14,66	9,25
Odborní pracovníci ÚS	11	2	9	0	0	10	10,4	3,95
Ostatní pracovníci	2	0	2	0	0	2	2	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	26	5	7	8	14	11
Ženy	2	15	0	0	2	4	9

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	4	3	5	5	3	0	5	6	0
Ženy	2	3	4	3	3	0	4	1	0

Tabuľka 1d Priemerný vek zamestnancov organizácie k 31.12.2015

	Kmeňoví zamestnanci	**Vedeckí pracovníci**	**Riešitelia projektov**
Muži	46,9	45,2	46,2
Ženy	43,7	41,6	44,0
Spolu	45,4	44,1	45,3

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

Ústav anorganickej chémie SAV v roku 2015 nezaznamenal žiadne zásadné zmeny v organizačnej štruktúre.

Priemerný vek zamestnancov ÚACH SAV dlhodobo ostáva pod hranicou 46 rokov. V roku 2015 bol priemerný vek všetkých pracovníkov ústavu 45,4 roka a priemerný vek vedeckých pracovníkov 44,1. I napriek tomu, že zamestnávanie mladých schopných postdocov na ústave je jednou z hlavných priorít, nevieme ju v požadovanej miere primerane naplniť. Ak sa podarí nejakého mladého vedeckého pracovníka po skončení PhD štúdia zamestnať, tak len cez projekty, a to znamená, že na dobu 2-3 rokov, za tabuľkovú mzdu. Mnohí z mladých vedeckých pracovníkov takúto ponuku odmietnu. Z toho plynie aj pravdepodobné zvyšovanie priemerného veku zamestnancov v blízkej budúcnosti, keďže počet pracovníkov v dôchodkovom veku je minimálny. Takáto situácia kladie nároky na personálnu a predovšetkým mzdovú politiku vedenia ústavu. Motivácia mladých pracovníkov pre zotrvanie na ústave sa realizuje predovšetkým prostredníctvom poskytnutia možnosti zvyšovania ich kvalifikácie (stupeň IIb, IIa a Ia), pričom je to jediný prostriedok pre zvyšovanie vedeckej výkonnosti organizácie. Zvyšovanie kvalifikácie vedeckých pracovníkov má logicky za následok zvýšený tlak na mzdový fond. Tento fakt by mohlo pri tvorbe rozpočtu, hlavne mzdových fondov ústavov, zohľadniť aj vedenie SAV pri presadzovaní vlastnej mzdovej politiky v rámci SAV. Ústav sa podieľal na realizácii projektov financovaných zo ŠF EÚ (ktoré v roku 2015 všetky končia) v pozícii partnera. V roku 2015 bol riešiteľom ešte 7 projektov. Aj napriek tomu, že tieto projekty už končia, administratívne zaťaženie ostáva, pričom mzdové náklady na túto administráciu už nie je možné vykrývať z projektov, ale len zo mzdového fondu. Navyše, výraznú časť administratívnych výkonov preberajú aj vedeckí pracovníci. Prepočítaný počet pracovníkov v roku 2015 je na úrovni 65,49 FTE, čo je výrazný pokles oproti roku 2014 (76,2). Súvisí to s už spomínaným ukončením projektov ŠF v priebehu roka 2015. Pri problematickom preplácaní prostriedkov z Vedeckej agentúry Ministerstva školstva, vedy, výskumu a športu SR pre ŠF EÚ (VA) vznikajú veľmi napäté situácie v mzdovom fonde ústavu, z ktorého si musíme „požičiavať“ na financovanie, či už administratívnych alebo vedeckých pracovníkov. Tento komplikovaný proces prináša ďalšiu zbytočnú administratívnu záťaž. Navyše, všetky neoprávnené výdavky na novoprijatých pracovníkov hradených zo ŠF znáša ústav, pričom tieto neoprávnené výdavky sú podľa nás agentúrou generované často neopodstatnene. Celá vyššie opísaná situácia spôsobuje nezvyčajne vysokú

fluktuáciu pracovníkov, vedeckých a aj administratívnych. V roku 2015 odišli dvaja pracovníci (v roku 2014 traja), ktorí sa starali o administratívu štrukturálnych fondov, tiež aj z dôvodu získania výhodného pracovného miesta v súkromnej sfére. Na ich miesto momentálne nemáme náhradu. Stav je o to kritickejší, že celú administráciu projektov ŠF máme pokrytú len polovičným úväzkom.

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	10	2	120 785	120 785	2 866
2. Projekty, ktoré boli r. 2015 financované APVV	3	5	128 266	56 999	66 094
3. Projekty OP ŠF	0	7	-	-	844 141
4. Projekty centier excelentnosti SAV	0	1	-	-	2 081
5. Iné projekty (FM EHP, ŠPVV, Vedecko-technické projekty, ESF, SASPRO, na objednávku rezortov a pod.)	1	0	5 797	5 797	-

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	-	7	6
2. Projekty výziev OP ŠF podané r. 2015	Bratislava		
	Regióny		

Projekty podané v roku 2015 - ÚACH podávateľ

Názov projektu: Fluoridové taveniny kritických prvkov pre nekonvenčné aplikácie
Evidenčné číslo projektu: APVV-15-0479 Akronym: FLUMECE
Koordinátor: M. Boča
Stav: podaný

Názov projektu: Vlastnosti nových progresívnych konštrukčných materiálov v agresívnom prostredí roztavených solí
Evidenčné číslo projektu: APVV-15-0738 Akronym: BENECOM
Koordinátor: F. Šimko
Partner: Fyzikálny ústav SAV
Stav: podaný

Názov projektu: Nové technológie pri výrobe hliníka - Fyzikálno-chemické a elektrochemické skúmanie sľubných draselných kryolitových sústav

Evidenčné číslo projektu: SK-CN-2015-0014 Akronym: NewTechAl
Koordinátor: B. Kubíková
Partner: Northeastern University, Shenyang, Čína
Stav: schválený

Názov projektu: Nanokompozitné materiály na báze organo-fosfóniových smektitov a polymérov
Evidenčné číslo projektu: APVV-15-0741 Akronym: nanomat
Koordinátor: P. Komadel
Partner: Ústav polymérov SAV
Stav: podaný

Názov projektu: Kompozitné vrstvy pre vysokoteplotnú protikoróznu ochranu kovov
Evidenčné číslo projektu: APVV-15-0014
Koordinátor: D. Galusek
Partneri: Trenčianska univerzita Alexandra Dubčeka; Ústav materiálového výskumu
Stav: podaný

Názov projektu: Zhodnotenie druhotných surovín pre materiály s využitím v extrémnych podmienkach
Evidenčné číslo projektu: APVV-15-0540 Akronym: SERAMAT
Koordinátor: M. Hnatko
Stav: podaný

Názov projektu: Vývoj nových teoretických nástrojov pre predikciu a interpretáciu EPR a NMR parametrov
Evidenčné číslo projektu: APVV-15-0726 Akronym: Rel-NMR-EPR
Koordinátor: V. Malkin
Stav: podaný

<u>Projekty podané v roku 2015</u> - ÚACH partner

Názov projektu: Prevencia a eradikácia mikrobiálnych biofilmov vo vzťahu k nanomateriálom
Evidenčné číslo projektu: APVV-15-0347 Akronym: BiofNano
Podávateľ projektu: Prírodovedecká fakulta, Univerzita Komenského v Bratislave
Koordinátor ÚACH: J. Bujdák
Stav: podaný

Názov projektu: Heterocykly pre progresívne trendy storočia
Evidenčné číslo projektu: APVV-15-0589 Akronym: PROGNOZHET
Podávateľ projektu: Fakulta chemickej a potravinárskej technológie STU
Koordinátor ÚACH: Ľ. Smrčok
Stav: podaný

Názov projektu: Nové sklené a sklokeramické fosfory na báze hlinitanov vzácnych zemín pre aplikáciu v pevnolátkových energiu šetriacich svetelných zdrojoch vyžarujúcich biele svetlo (pc – WLED diódy).
Evidenčné číslo projektu: APVV-15-0182
Podávateľ projektu: Trenčianska univerzita Alexandra Dubčeka, Trenčín
Koordinátor ÚACH: D. Galusek
Stav: podaný

Názov projektu: Korózia a zvetrávanie úžitkových skiel.
Evidenčné číslo projektu: APVV-15-0284 Akronym: KOZUS
Podávateľ projektu: Trenčianska univerzita Alexandra Dubčeka, Trenčín
Ďalší partneri: Rona a.s.
Koordinátor ÚACH: M. Liška
Stav: podaný

Názov projektu: Vývoj zloženia skla odolného voči zvetrávaniu
Evidenčné číslo projektu: APVV-15-0756
Podávateľ projektu: Rona a.s.
Koordinátor ÚACH: P. Šimurka
Stav: podaný

Názov projektu: Keramické materiály pre použitie v extrémnych podmienkach
Evidenčné číslo projektu: APVV-15- 7898 Acronym: EXTREMECER
Podávateľ projektu: Ústav materiálového výskumu SAV, Košice
Koordinátor ÚACH: Z. Lenčéš
Stav: podaný

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	2	-	-	93 726
2. Multilaterálne projekty v rámci vedeckých programov COST, ERANET, INTAS, EUREKA, ESPRIT, PHARE, NATO, UNESCO, CERN, IAEA, ESF (European Science Foundation), ERDF a iné	0	3	-	-	-
3. Projekty v rámci medzivládnych dohôd o vedecko-technickej spolupráci	2	0	-	-	-
4. Bilaterálne projekty	2	0	-	-	-
5. Podpora medzinárodnej spolupráce z národných zdrojov (MVTS, APVV,...)	3	5	48 349	48 349	22 492
6. Iné projekty financované alebo spolufinancované zo zahraničných zdrojov	0	0	-	-	-

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 v 7. RP EÚ		
Počet podaných projektov Horizont 2020	2	4

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

Medzinárodné projekty podané v roku 2015

Názov projektu: Long-term in-service degradation assessment and modelling in CSP technologies
Evidenčné číslo projektu: 685653-1
Akronym: LTS-CSP
Podávateľ projektu: ÚACH SAV, M. Boča
Partner/i: Fraunhofer-Institut für Keramische Technologien und Systeme (Germany), Agenzia Nazionale per le Nuove Tecnologie, L'Energia e lo Sviluppo Economico Sostenible (Italy), Vysoká škola báňska – Technická univerzita Ostrava (Czech Republic), Istanbul Teknik Universitesi (Istanbul Technical University) (Turkey), Slovenská technická univerzita Bratislava (Slovakia), Universita degli studi di Roma Torvergata (Italy), VUEZ (Slovakia), HySyTech S.r.l (Italy), Fumagalli S.p.A (Italy)
Stav: nepodporený

Názov projektu: High-efficiency solar energy harvesting in CSP
Evidenčné číslo projektu: 720892-1
Akronym: HESE-CSP
Podávateľ projektu: ÚACH SAV, M. Boča
Partner/i: Agenzia Nazionale per le Nuove Tecnologie, L'Energia e lo Sviluppo Economico Sostenible (Italy), Vysoká škola báňska – Technická univerzita Ostrava (Czech Republic), Istanbul Teknik Universitesi (Turkey), Slovenská technická univerzita Bratislava (Slovakia), Universita degli studi di Roma Torvergata (Italy), HySyTech S.r.l (Italy), Politecnico di Torino (Italy), CEMHTI - Conditions Extrêmes et Matériaux: Haute Température et Irradiation CNRS (France), Fraunhofer Institute for Ceramic Technologies and Systems (Germany), Fumagalli S.p.A (Italy)
Stav: podaný

Názov projektu: Development and testing of ultra-high-temperature-ceramics obtained via established and novel sintering techniques for space applications.
Evidenčné číslo projektu: 690051 (H2020-SC5-2015-one-stage)
Akronym: SHARP
Podávateľ projektu: Centre National de la Recherche Scientifique, Montpellier, Francúzsko
Koordinátor ÚACH: Z. Lenčéš
Partner/i: University of Cagliari (IT), National Research Council (IT), Fraunhofer Institute for Ceramic Technologies and Systems (DE), Institute of Materials Research - Slovak Academy of Science (SK)
Stav: zamietnutý

Názov projektu: Carbon nanotubes and graphene-reinforced glasses and ceramics: Processing and mechanical behaviour.
Evidenčné číslo projektu: 675751 (H2020-MSCA-ITN-2015)
Akronym: Carbceram
Podávateľ projektu: Universidad de Sevilla, španielsko
Koordinátor ÚACH: P. Šajgalík
Partner/i: Institut National des Sciences Appliquees de Lyon (FR), Panepistimio Ioanninon (EL), Ecole Polytechnique Federale de Lausanne (CH), University of Oxford (UK), Consiglio Nazionale delle Ricerche (IT)
Stav: zamietnutý

Názov projektu: Mechanisms of Corrosion Induced Microstructure Damage in Materials used in Molten Fluoride Salts
Identifikačné číslo: 707981 Akronym: CORMIC
Výzva: H2020-MSCA-IF-2015 Téma: MSCA-IF-2015-EF
Uchádzač: Zengjie Wang, China
Koordinátor ÚACH: M. Boča
Stav: podaný

Názov projektu: Foams and grates modified elctrodes by metal oxides and recovery of acitnides and lanthanides applications in molten fluoride
Identifikačné číslo: 708369 Akronym: SAMOSA

Výzva: H2020-MSCA-IF-2015 Téma: MSCA-IF-EF-ST
Uchádzač: Jacques Romain Njimou, Cameroon
Koordinátor ÚACH: M. Boča
Stav: podaný

Údaje k domácim a medzinárodným projektom sú uvedené v Prílohe B.

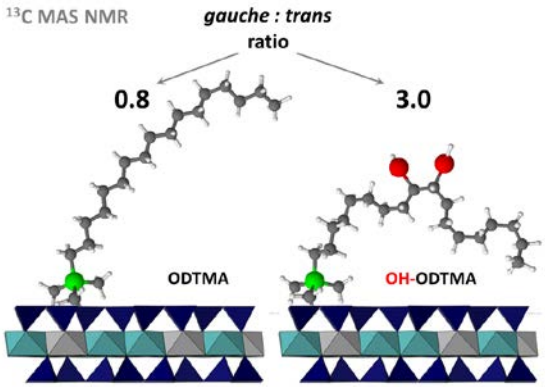
2.2.3. Zámery na čerpanie štrukturálnych fondov EÚ v ďalších výzvach

2.3. Najvýznamnejšie výsledky vedeckej práce (maximálne 1000 znakov + 1 obrázok)

2.3.1. Základný výskum

Názov: Nový typ surfaktantu pre polymérno-ílové nanokompozity
Riešitelia z ÚACH: Ľ. Jankovič, J. Madejová

Polymérno-ílové nanokompozity sú v súčasnosti atraktívnou oblasťou multidisciplinárneho výskumu vďaka lepším vlastnostiam v porovnaní s pôvodným polymérom alebo konvenčnými mikro- alebo makrokompozitmi. Pozostávajú z dvoch alebo viacerých fáz, pričom nanokompozitnou zložkou je ílový minerál, zvyčajne modifikovaný alifatickými alkylamónnymi katiónmi. Bežné, komerčne dostupné organokatióny (surfaktanty) postrádajú sekundárnu reaktivitu umožňujúcu zlepšenie interakcie organoílu s polymérom. Preto sa z oleylamínu cielene pripravil pomocou dvojstupňovej syntézy reaktívny štruktúrne unikátny derivát oktadecyltrimetylamónia (ODTMA) – dihydroxyoktadecyltrimetylamónny katión (OH-ODTMA). Novo-pripravený surfaktant sa interkaloval do medzivrstvia montmorillonitu a výsledný organoíl sa charakterizoval viacerými metódami. Rtg analýza poukázala na expanziu medzivrstvia montmorillonitu a ^{13}C MAS NMR spektroskopia potvrdila zvýšený výskyt neusporiadaných *gauche* konformérov v porovnaní s pôvodným, nesubstituovaným organokatiónom. Nový surfaktant s dvomi OH skupinami v strede alkylového reťazca je perspektívnym komponentom pre prípravu polyuretánových nanokompozitov.

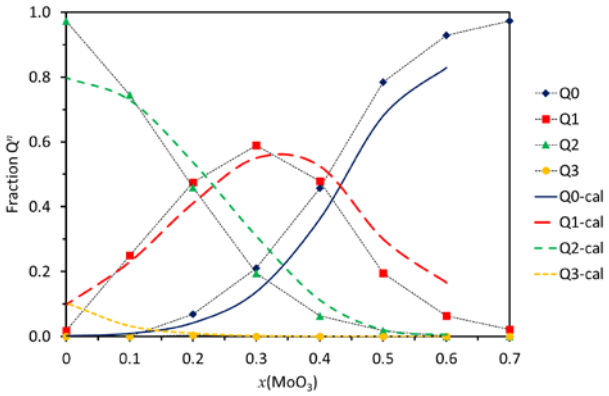


Publikácia:
JANKOVIČ, Ľ. - KRONEK, J. - MADEJOVÁ, J. - HRONSKÝ, V. (9,10-Dihydroxyoctadecyl)ammonium: A structurally unique class of clay intercalable surfactants. In European Journal of Inorganic Chemistry, 2015, p. 2841-2850. (2.942 - IF2014).
Projekty:
Vega 2/0132/13 - Príprava a vlastnosti nových typov organoílov pre polymérne a environmentálne aplikácie
APVV 0362-10 - Organoíly a ich kompozity s polymérmi

Názov: Metóda parametrizácie termodynamických modelov.
Riešitelia z UACh M. Chromčíková, M. Liška + VŠChT J. Macháček, O. Gedeon

Súčasné termodynamické databázy neposkytujú dáta potrebné pre konštrukciu termodynamických modelov typu Šachmatkina a Vediščevy pre väčšinu viaczložkových nesilikátových sklotvorných sústav. Preto bola vypracovaná a overená metóda na získanie chýbajúcich termodynamických dát. Metóda vychádza z experimentálne získaných kvantitatívnych štruktúrnych dát – typicky z MAS NMR spektroskopie. Na základe týchto experimentálnych dát sa reakčné Gibbsove energie zložiek zahrnutých v termodynamickom

modeli získajú minimalizáciu sumy štvorcov odchýlok medzi experimentálnym a vypočítaným relatívnym zastúpením jednotlivých Q^n štruktúrnych jednotiek. Výsledky sú overené porovnaním MCR (Multivariate Curve Analysis) analýzy série Ramanových spektier a rozkladom týchto spektier založeným na rovnovážnych látkových množstvách zložiek sústavy získaných z termodynamického modelu.



Porovnanie experimentálnej (^{31}P MAS NMR - body) a termodynamickým modelom s optimalizovanými parametrami vypočítanej (čiary) distribúcie štruktúrnych motívov ($Q^n \equiv O=P(-O-)_n(-O^-)_{3-n}$) pre sklá so zložením $(0.5-x/2)[ZnO?P_2O_5]?xMoO_3$.

Publikácie:

LIŠKA, M. - MACHÁČEK, J. - CHROMČÍKOVÁ, M. - GEDEON, O. Thermodynamic model and structure of ZnO-MoO3-P2O5 glasses. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B, 2015, vol. 52, no. 2, p. 63-66. (0.691 - IF2014)

LIŠKA, M. - LISSOVÁ, M. - PLŠKO, A. - CHROMČÍKOVÁ, M. - GAVENDA, T. - MACHÁČEK, J. Thermodynamic model and Raman spectra of ZnO-P2O5 glasses. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 121, no. 1, p. 85-91. (2.042 - IF2014)

CHROMČÍKOVÁ, M. - LIŠKA, M. - ZEMANOVÁ, V. - PLŠKO, A. - HRUŠKA, B. - GAVENDA, T. Thermodynamic model and Raman spectra of CaO-P2O5 glasses. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 121, no. 1, p. 269-274. (2.042 - IF2014)

2.3.2. Aplikačný typ

Názov: Nové prístupy ku koróznym vlastnostiam fluoridových tavenín
Riešiteľský kolektív: Viliam Pavlík, Miroslav Boča

O fluoridových taveninách je známe, že svojou vysokou chemickou agresivitou v roztavenom stave dokážu dobre rozpúšťať takmer akýkoľvek materiál. Aj z toho dôvodu kolektív skúmal potenciálne využitie fluoridov pri rafinácii rôznych materiálov vznikajúcich napríklad v jadrovom priemysle. Zirkónium a jeho zliatiny sú najčastejšie používanými obalovými materiálmi pre palivové kazety. Zistilo sa, že pri vhodnom zložení roztavenej zmesi sa zvyšuje rozpustnosť zirkónia a jeho zliatin, čím sa tiež uľahčuje prístup ku vyhoretému jadrovému palivu. Z takejto zmesi je potom možné získať čisté zirkónium alebo iný materiál napr. elektrolytickým rafinovaním. Na fluoridových taveninách sa experimentálne dokázal predpoklad, že prvok s najnižším elektrochemickým potenciálom sa uvoľňuje zo zliatiny ako prvý, pričom narúša štruktúru povrchu zliatiny. Následne sa začnú rozpúšťať ďalšie prvky s vyšším elektrochemickým potenciálom, až pokiaľ sa nezačne rozpúšťať skeletárna štruktúra. Zároveň bola vyvinutá nová metodika špeciálne urýchlených koróznych testov (advanced accelerated aging tests) pre potreby testovania koróznej výdrže vhodných materiálov pre fluoridové taveniny.

Publikácie:

V. PAVLÍK - P. BARBORÍK - M. BOČA - Z. VASKOVÁ, Interaction of metallic zirconium and its alloys Zry-2 and E110 with molten eutectic salt of LiF-NaF-KF containing zirconium fluoride components, Chemical Papers 70 (2) 197–205 (2016), DOI: 10.1515/chempap-2015-0202

V. PAVLÍK - M. KONTRÍK - M. BOČA, Corrosion behaviour of Incoloy 800H/HT in fluoride molten salt FLINAK(eut)-MFx (MFx = CrF3, FeF2, FeF3 and NiF2). In New Journal of Chemistry, 2015, vol. 39, p. 9841-9847. (3.086 - IF2014).

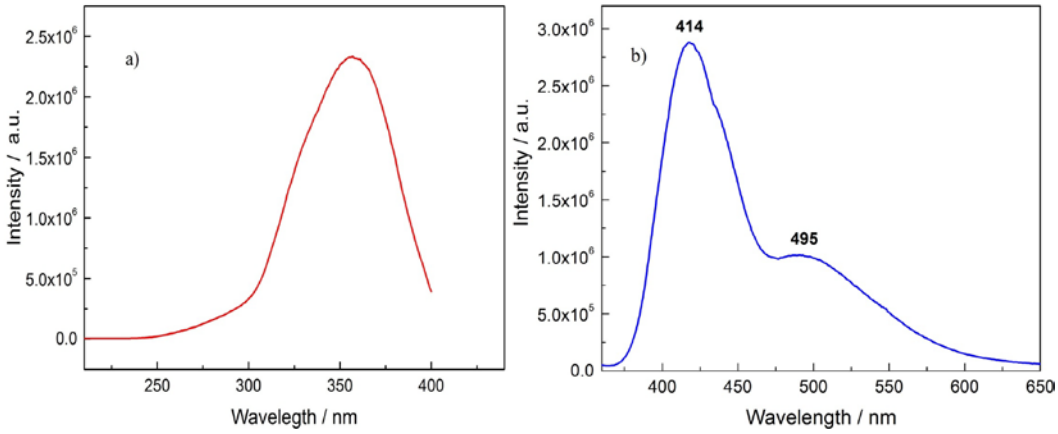
Projekt

VEGA 2/0095/12 - Roztavené fluoridové systémy pre vysokoteplotné aplikácie s potenciálom využitia v energetickom sektore

2.3.3. Medzinárodné vedecké projekty

Názov: Nitridové materiály s funkčnými vlastnosťami pre aplikácie v energetike
Riešitelia z UACh: P. Šajgalík, Z. Lenčéš, I. Ibrahim, J. Sedláček

Luminoforom na báze $LaSi_3N_5$ aktivovaných lantanoidmi (Ln) sa v posledných rokoch venuje zvýšená pozornosť v dôsledku ich vynikajúcich fotoluminescenčných vlastností a možnosti využitia v úsporných LED, monitoroch, spotrebnej elektronike, atď. V tejto práci boli pripravené luminofory na báze $LaSi_3N_5$ dopované prvkami Ce a Sm nitridáciou zmesí práškov LaSi-Si-Si_3N_4-CeO_2 a LaSi-Si-Si_3N_4-Sm_2O_3. Luminofor $LaSi_3N_5$:Ce emitoval v oblasti fialového a zeleného svetla (414 nm a ~500 nm), kým luminofor $LaSi_3N_5$:Sm v oranžovo-červenej oblasti viditeľného svetla.
Na lepšie pochopenie elektrónovej štruktúry stechiometrického $LaSi_3N_5$ a lantanoidom dopovaného $LaSi_3N_5$ boli vykonané teoretické výpočty na báze DFT použitím balíku VASP a funkcionálu HSE06. Výsledky ukázali, že s narastajúcim atómovým číslom Ln^{3+} dopanta šírka zakázaného pásma $LaSi_3N_5$ klesá z hodnoty 4,68 eV (La^{3+}) na 0,84 eV (Eu^{3+}), potom vzrastie na hodnotu 4,67 eV (Gd^{3+}) a klesá na hodnotu 0,97 eV pre Yb^{3+}. $LaSi_3N_5$ dopovaný dvojmocným Ln^{2+} vykazuje opačný trend, šírka zakázaného pásma narastá z hodnoty 0,79 eV pre La^{2+} na 2,96 eV pre Eu^{2+}, resp. z 0,96 eV pre Gd^{2+} na 2,84 eV pre Yb^{2+}.
Schéma energetických hladín zostavená na základe *ab initio* výpočtov je v dobrej zhode zo schémou energetických hladín zostavenej z experimentálnych dát.



Obr. *Excitačné (a) and emisné spektrá (b) luminoforu LaSi3N5:Ce dopovaného 6% Ce.*

Publikácie:
I. IBRAHIM - Z. LENČÉŠ - P. ŠAJGALÍK - Ľ. BENCO, Electronic structure and energy level schemes of RE3+:LaSi3N5 and RE2+:LaSi3N5-xOx phosphors (RE=Ce, Pr, ND, Pm, Sm, Eu) from first principles. In Journal of Luminescence, 2015, vol. 164, p. 131-137. (2.719 - IF2014)
I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors: A role of oxygen atom. In Journal of the European Ceramic Society, 2015, vol. 35, no. 12, p. 3249-3253. (2.947 - IF2014).
I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Lanthanide-doped LaSi3N5 based phosphors: Ab initio study of electronic structures, band gaps and energy level locations. Journal of Luminescence, 172 (2016) 83-91.
I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Influence of Lanthanoid Dopant and N/O Substitution on the Electronic Structure and Luminescent Properties of Lanthanum Silicon Oxynitride Phosphors, in Proceedings of the 39th ICACC, January 25-30, 2015, Daytona Beach, Florida, USA, manuscript ID 2059687, pp. 1-9.

Projekt: Functional nitrides for energy applications “FUNEA” - 7RP

2.4. <u>Publikačná činnosť</u> (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)	**0 / 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)	**0 / 0**	**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)	**50 / 5**	**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)	**3 / 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)	**1 / 0**	**0 / 0**	**0 / 0**
b/ nerecenzované práce (BEE, BEF, CEC, CED)	**6 / 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)	**2 / 0**	**1 / 0**	**0 / 0**
15. Práce uverejnené na internete (GHG)	**1 / 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)	1264 / 6	40 / 0
Citácie v SCOPUS (1.2, 2.2)	76 / 2	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)	0 / 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	48
Prednášky a vývesky na domácich vedeckých podujatiach	18

2.6. Vyžiadané prednášky

2.6.1. Vyžiadané prednášky na medzinárodných vedeckých podujatiach

P. BOHÁČ - A. CZÍMEROVÁ - S. BELUŠÁKOVA - J. BUJDÁK, Hybridné systémy na báze ílových minerálov a organických farbív pripravené metódou LbL, Seminár Jílové minerály, VŠB TU Ostrava ve spolupráci se Společností pro výzkum a využití jílů, Ostrava, Česká republika, 26. 11. 2015.

D. GALUSEK, Ceramic nanocpomposites with alumina matrix, EMN Meeting on Ceramics, Double Tree by Hilton Orlando at SeaWorld, Orlando, USA, 26. - 29. 01. 2015

P. GAALOVÁ - A. ŠVANČARKOVÁ - J. BALKO - D. GALUSKOVÁ - F. LOFAJ - **D. GALUSEK**, Corrosion in acidic media, micromechanical properties and wear of human tooth enamel, 14th International Conference of the European Ceramic Society, Toledo, Španielsko, 21. - 25. 06. 2015

K. BODIŠOVÁ - V. POUCHLÝ - K. MACA - **D. GALUSEK**, Two-stage sintering, doping, and microstructure refinement of polycrystalline alumina, The first Polish-Korean Workshop on Advanced Ceramics, Zakopane, Poľsko, 19. 09. 2015

R. KLEMENT - A. PRNOVÁ - S.-J. SHIH - W.-H. TUAN, **D. GALUSEK,** Aluminate and aluminosilicate glass phosphors with rare earth and transient element activators, International Symposium on Advanced Ceramics and Technology for Sustainable Energy Applications, ACTSEA 2015, National Cheng Kung University, Tainan, Taiwan, 08. - 11. 11. 2015

Z. LENČÉŠ - M. HRABALOVÁ - I. IBRAHIM - Ľ. BENCO - P. ŠAJGALÍK, Influence of lanthanoid dopant and N/O substitution on the electronic structure and luminescent properties of silicon oxynitride phosphors, ICACC 2015 - 39th International conference and exposition on advanced ceramics and composites, Daytona Beach, Florida, USA, 25. - 30. 01. 2015

Z. LENČÉŠ - I. IBRAHIM - Ľ. BENCO - P. ŠAJGALÍK, Influence of rare-earth dopant and N/O substitution on the electronic structure and luminescent properties of silicon oxynitride phosphors, 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, Kanada, 14. - 19. 6. 2015

Z. LENČÉŠ - I. IBRAHIM - Ľ. BENCO - P. ŠAJGALÍK, Electronic Structure and Luminescent Properties of Rare-Earth Oxide Doped Silicon Oxynitride Phosphors, 11th Pacific Rim Conference of Ceramic Societies, PACRIM 11, 30. 08. - 04. 09. 2015, Jeju, Korea

V. MALKIN, Calculations of the EPR g-tensor in the framework of 2- and 4-component DFT and HF approaches. In Open Shells. Open Questions, Huset, Middelfart, Denmark, 24-26 august 2015

V. MALKIN, Introduction to calculation of NMR and EPR parameters (part 1), EU CECAM Workshop deMon2K and deMonNano tutorial, Orsay, Francúzsko, 14. – 21. 06. 2015.

O. MALKIN, Introduction to calculation of NMR and EPR parameters (part 2), EU CECAM Workshop deMon2K and deMonNano tutorial, Orsay, Francúzsko, 14. – 21. 06. 2015.
J. NOGA, Use of the helical-screw symmetry in the calculation of nanotubes: application to structural aspects and stability of superconducting nanotubular MgB_2. Frontiers of Electronic Structure Theory 2015 (FEST 15), Goa, India, 26. - 28. 5. 2015
J. NOGA, Optimized Thouless Expansion as an Alternative to Orbital Optimization Schemes. 15th International Congress of Quantum Chemistry, Beijing, Čína, 06. - 13. 6. 2015
J. NOGA, Exponential cluster expansion as a universal wave function ansatz, Miniconference on the occasion of Joe Paldus' 80th birthday, Praha, Česká republika, 27. 11. 2015
L. PETRA - C. BREEN - F. CLEGG - P. KOMADEL, Príprava a charakterizácia ílovo-uhlíkových kompozitov, Seminár Jílové minerály, VŠB TU Ostrava ve spolupráci se Společností pro výzkum a využití jílů, Ostrava, Česká republika, 26. 11. 20151.
P. ŠAJGALÍK - M. HNATKO - Z. LENČÉŠ - M. GALL - J. DUSZA - P. TATARKO - Z. CHLUP, GB chemistry of silicon nitride based nano-composites - implications to mechanical, tribological and chemical properties, ICACC 2015 - 39th international conference and exposition on advanced ceramics and composites, Daytona Beach, Florida, USA, 25. - 30. 01. 2015
P. ŠAJGALÍK - J. SEDLÁČEK - Z. LENČÉŠ - J. DUSZA - H.-T. LIN, Additive-free hot-pressed silicon carbide ceramics - a material with exceptional mechanical properties. ICACC 2015 - 39th international conference and exposition on advanced ceramics and composites, Daytona Beach, Florida, USA, 25. - 30. 01. 2015
P. ŠAJGALÍK - M. HNATKO - Z. LENČÉŠ - M. GALL - J. DUSZA - P. TATARKO - Z. CHLUP, Chemistry composition of GB in Si_3N_4 - simulation and experiment, International workshop on Sintering and microstructural evolution in ceramics, KAIST, Daejeon, Korea, 27. - 29. 08. 2015
P. ŠAJGALÍK - J. SEDLÁČEK - Z. LENČÉŠ - J. DUSZA - H.-T. LIN, Additive-free hot-pressed silicon carbide ceramics - a material with exceptional mechanical properties, ACTSEA 2015 - 5th international symposium on advanced ceramics and technology for sustainable energy applications, Tainan, Taiwan, 08. - 11. 11. 2015
P. ŠAJGALÍK Energy efficient processing of additive-free hot-pressed silicon carbide ceramics; 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, Kanada, 14. - 19. 06. 2015
P. ŠAJGALÍK Thermal shock resistance, wear behaviour and oxidation resistance of silicon nitride based nano-composites; 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, Kanada, 14. - 19. 06. 2015
P. ŠAJGALÍK Slide and abrasive wear of graphite/silicon nitride based composites; 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, Kanada, 14. - 19. 06. 2015
P. ŠAJGALÍK - M. HNATKO - Z. LENČÉŠ - M. GALL - J. DUSZA - P. TATARKO - Z. CHLUP, Role of GB chemistry of silicon nitride based ceramics with respect to the mechanical properties – experimental and theoretical approach; 14th International Conference of the European Ceramic Society, 2015, Toledo, Španielsko, KEYNOTE LECTURE, 21. - 25. 06. 2015
P. ŠAJGALÍK, Functionalization of nitride engineering ceramics by polymer derived ceramic method; GZ 1145 German-Chinese Workshop „Preparation and Application of Ultra-high Temperature Ceramic Matrix Composites“, Darmstadt, Nemecko, 26. - 31. 07. 2015
P. ŠAJGALÍK - Z. LENČÉŠ - R. RIEDEL - H.-J. KLEEBE. Functionalization of silicon nitride engineering ceramics by polymer-derived sintering aids. In 90th DKG annual meeting in conjunction with the symposium on high-performance ceramics, Bayreuth, Nemecko, 15. - 17. 03. 2015, p. 152**P. ŠAJGALÍK** - J. SEDLÁČEK - Z. LENČÉŠ - J. DUSZA - H.-T. LIN, Dense Additive-Free Hot-Pressed Silicon Carbide Ceramics, 11th Pacific Rim Conference of Ceramic Societies, PACRIM 11, Jeju, Korea, 30. 08. - 04. 09. 2015

2.6.2. Vyžiadané prednášky na domácich vedeckých podujatiach

V. PAVLÍK, Cesta k inovatívnosti novodobých materiálov, odborný seminár „Aplikácia materiálov v praxi, Vysoké Učení Technické, Brno, Czech Republic, 20. 11. 2015
P. KOMADEL, Výskum najmä materiálov na ÚACH SAV, 50 rokov od založenia KACH v Košiciach, 15. - 17. 06. 2015

2.6.3. Vyžiadané prednášky na významných vedeckých inštitúciách

Ak boli príspevky publikované, sú súčasťou Prílohy C, kategória (AFC, AFD, AFE, AFF, AFG, AFH)

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

2.7.1. Vynálezy, na ktoré bol udelený patent

2.7.2. Prihlásené vynálezy

Na Slovensku - počet patentov: 1

Číslo PV: PP 97-2015
Mená autorov: Komadel Peter, Jankovič Ľuboš, Chodák Ivan, Jochec Mošková Daniela, Sedničková Michaela
Názov vynálezu: Gumárenská zmes na báze polymérnej kompozície s obsahom nanoplniva
Majiteľ / spolumajiteľ: Ústav anorganickej chémie / Ústav polymérov

2.7.3. Predané licencie

2.7.4. Realizované patenty

Finančný prínos pre organizáciu SAV v roku 2015 a súčet za predošlé roky sa neuvádzajú, ak je zverejnenie v rozpore so zmluvou súvisiacou s realizáciou patentu.

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
Drábik Milan	APVV	1
	VEGA	2
Galusek Dušan	VEGA	1
Hnatko Miroslav	VEGA	3

2.9. Účasť na spracovaní hesiel do encyklopédie Beliana

Počet autorov hesiel: 1

2.10. Iné informácie k vedeckej činnosti.

Počet karentovaných publikácií a kapitol v monografiách v tomto roku dosiahol číslo 52 CCC, čo pri počte 38,43 vedeckých pracovníkov (prepočítaný stav, podľa Tabuľky 1a) znamená 1,35 karentovanej publikácie na vedeckého pracovníka. Tento parameter oproti vlaňajšku mierne narástol, ale tento nárast nemožno považovať za výrazný. Takýto stav považujeme za neuspokojivý. Cieľom ostáva dosiahnuť dve publikácie na vedeckého pracovníka ročne, ktorý zodpovedá štandardu vyspelých vedeckých pracovísk s podobným zameraním. Priemerný impakt faktor časopisov, v ktorých boli práce uverejnené, bol 2,25, kým vlani bol 2,38. Citovanosť (vo všetkých dostupných databázach WOK – 1270, SCOPUS – 78) na vedeckého pracovníka (prepočítaný stav) je 35 citácií. Napriek miernemu poklesu celkového počtu citácií tento parameter v porovnaní s minulým rokom vzrástol (33 citácií) predovšetkým v dôsledku zníženia počtu vedeckých pracovníkov v roku 2015. Relatívne vysoké renomé ústavu vo svetovej vedeckej komunite dokumentujú vyžiadané prednášky pracovníkov na medzinárodných vedeckých podujatiach, ktorých bolo 27, viaceré z nich odzneli na veľmi významných svetových konferenciách.

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	7	1	2	0	0	1	0	0	1	0
Interná z iných zdrojov	1	1	0	0	1	0	0	0	0	0
Externá	0	1	0	0	0	0	0	0	0	0
Spolu	8	3	2	0	1	1	0	0	1	0
Súhrn	11		2		2		0		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	1	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
Ismail Ibrahim	interné štúdium hradené z iných zdrojov	2 / 2013	10 / 2015	4.1.15 anorganická chémia	doc. Ing. Zoltán Lenčéš PhD., Ústav anorganickej chémie SAV	Prírodovedecká fakulta UK
Magdaléna Precnerová	interné štúdium hradené z prostriedkov SAV	9 / 2011	6 / 2015	4.1.15 anorganická chémia	prof. RNDr. Pavol Šajgalík DrSc., Ústav anorganickej chémie SAV	Prírodovedecká fakulta UK

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
	chemická fyzika	4.1.11	Prírodovedecká fakulta UK
	anorganická chémia	4.1.15	Prírodovedecká fakulta UK
	anorganická technológia a materiály	5.2.19	Fakulta 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. Miroslav Boča, PhD. (anorganická chémia)	prof. Ing. Dušan Galusek, DrSc. (Fakulta špeciálnej techniky TnUAD)	
doc. Ing. Miroslav Boča, PhD. (anorganická technológia a materiály)	prof. Ing. Dušan Galusek, DrSc. (Fakulta zdravotníctva TnUAD)	
doc. RNDr. Juraj Bujdák, DrSc. (anorganická chémia)	prof. Ing. Dušan Galusek, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	
doc. RNDr. Milan Drábik, CSc. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Fakulta chemické technologie VŠCHT, Praha, ČR)	
prof. Ing. Dušan Galusek, DrSc. (anorganická technológia a materiály)	prof. Ing. Marek Liška, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	
doc. Ing. Miroslav Hnatko, PhD. (anorganická technológia a materiály)	prof. RNDr. Jozef Noga, DrSc. (Fakulta prírodných vied UMB)	
RNDr. Peter Komadel, DrSc. (anorganická chémia)	prof. RNDr. Jozef Noga, DrSc. (Prírodovedecká fakulta UK)	
doc. Ing. Zoltán Lenčéš, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Fakulta metalurgie a materiálového inženírství, Vysoká škola báňská TU)	
doc. Ing. Zoltán Lenčéš, PhD. (anorganická chémia)	prof. RNDr. Pavol Šajgalík, DrSc. (Hutnícka fakulta TUKE)	
doc. Ing. Zoltán Lenčéš, PhD. (odbor v zahraničí)	prof. RNDr. Pavol Šajgalík, DrSc. (Slovenská technická univerzita v Bratislave)	
prof. Ing. Marek Liška, DrSc. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	
prof. Ing. Marek Liška, DrSc. (fyzika kondenzovaných látok a akustika)	prof. RNDr. Pavol Šajgalík, DrSc. (Univerzita Komenského v Bratislave)	
prof. Ing. Marek Liška, DrSc. (odbor v zahraničí)	prof. RNDr. Pavol Šajgalík, DrSc. (Univerzita Pavla Jozefa Šafárika v Košiciach)	
RNDr. Jana Madejová, DrSc. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Vysoké učení technické, Brno)	
prof. RNDr. Jozef Noga, DrSc. (chemická fyzika)		
prof. RNDr. Jozef Noga, DrSc. (anorganická chémia)		
prof. RNDr. Jozef Noga, DrSc. (fyzika plazmy)		

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	1	1	4	0
Celkový počet hodín v r. 2015	26	60	168	0

Prehľad prednášateľov predmetov a vedúcich cvičení, s uvedením názvu predmetu, úväzku, katedry, fakulty, univerzity/vysokej školy je uvedený v Prílohe D.

Tabuľka 3g Aktivity pracovníkov na VŠ

1.	**Počet pracovníkov, ktorí pôsobili ako vedúci alebo konzultanti diplomových a bakalárskych prác**	0
2.	**Počet vedených alebo konzultovaných diplomových a bakalárskych prác**	0
3.	**Počet pracovníkov, ktorí pôsobili ako školitelia doktorandov (PhD.)**	9
4.	**Počet školených doktorandov (aj pre iné inštitúcie)**	18
5.	**Počet oponovaných dizertačných a habilitačných prác**	9
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**	6
9.	**Počet pracovníkov, ktorí pôsobili ako členovia komisií, resp. oponenti v inauguračnom alebo habilitačnom konaní na vysokých školách**	2

3.6. Iné dôležité informácie k pedagogickej činnosti

ÚACH SAV vypísal pre akademický rok 2015/2016 celkovo 9 tém pre doktorandské štúdium v troch rôznych študijných odboroch: 4.1.15 Anorganická chémia, 5.2.19 Anorganické technológie a materiály a 4.1.11 Chemická fyzika. Na akademický rok 2015/2016 bol prijatý jeden nový študent (Ing. Stanislav Mikušínec na študijný odbor 5.2.19).
V akademickom roku 2014/2015 obhájili dizertačné práce Mgr. Magdaléna Precnerová a Ismail Ibrahim, MSc. v študijnom odbore 4.1.15 Anorganická chémia.
PhD študenti na ÚACH SAV sa pravidelne zúčastňujú na študentských vedeckých podujatiach a konferenciách, akými sú napríklad ŠVK 2015 Bratislava.
Dôležitou súčasťou pedagogického procesu na ÚACH SAV je aj organizovanie odbornej praxe pre študentov 4. a 5. ročníka (PriF UK v Bratislave v spolupráci s prof. G. Pleschom).
Dňa 6. októbra 2015 sa na ÚACH SAV konala SÚŤAŽ MLADÝCH VEDECKÝCH PRACOVNÍKOV. Súťaže sa zúčastnilo 6 mladých pracovníkov do 35 rokov. Ich prezentácie posudzovala šesťčlenná komisia, ktorej predsedníčkou bola RNDr. Jana Madejová, DrSc. Výsledky súťaže:
1. miesto: Mgr. Lukáš Konečný
2. miesto: Mgr. Peter Boháč
3. miesto: Mgr. Lukáš Petra

Finále súťaže sa uskutočnilo 5. novembra 2015 na Ústave anorganickej chémie AV ČR v Prahe-Řeži, na ktorom sa Mgr. Peter Boháč umiestnil na 3. mieste.

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

Tableware glass melting and forming
- Trenčianske Teplice, Slovensko, 56 účastníkov, 19.02.-20.02.2015
- Prezentácia výsledkov projektu PVTECHSKLO z oblasti tavenia a tvarovania úžitkového skla. Účastníci z ôsmich krajín sveta. Na konferencii bolo prezentovaných 11 prednášok.

8th Workshop on Modern Methods in Quantum Chemistry
- Mariapfarr, Rakúsko, 38 účastníkov, 22.02.-27.02.2015
- 36 prednášok, Nemecko, Česko, Nórsko, Fínsko, Dánsko, Slovensko

Engineering Ceramics 2015 – Materials for better life,
- Smolenice, Slovensko, 86 účastníkov, 10.05.-14.05.2015
- Na konferencii boli prezentované výsledky a nové trendy v oblasti výskumu pokročilých keramických materiálov s prednostným zameraním sa na keramické nanokompozity, biokeramické materiály, keramické materiály na konverziu alebo úsporu energie, čistenie ovzdušia a vôd, prípravu senzorov škodlivých látok a keramických materiálov pre vysokoteplotné aplikácie (nad 1400 oC).
  Účastníci z 15 krajín
  Počet pozvaných prednášok (invited): 22
  Počet prednášok (oral): 26

6th Japan-Czech-Slovak (JCS) International Symposium on Theoretical Chemistry
- Smolenice, Slovensko, 80 účastníkov, 11.10.-15.10.2015
- Na podujatí odznelo 36 prednášok, bolo prezentovaných 25 postrov, účastníci z Japonska, Česka, Slovenska, Nórska.

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)

9th Workshop on Modern Methods in Quantum Chemistry
- Mariapfarr, Rakúsko, 23.02.-28.02.2016, (Vladimír Malkin, 02/59410469, uachmalk@savba.sk)

8th Mid-European Clay Conference (MECC)
- Košice, Slovensko, 04.07.-08.07.2016, (Jana Madejová, 02/59410406, uachjmad@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	6	8	5

4.2. Členstvo a funkcie v medzinárodných orgánoch

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

doc. RNDr. Milan Drábik, CSc.
- European Association for Chemical and Molecular Sciences (EuCheMS) (funkcia: člen v divízii anorganická chémia a v divízii chémia tuhej fázy a materiálová chémia)

- Institute of Materials, Minerals and Mining, U.K. (funkcia: doživotný člen)
- International Union of Pure and Applied Chemistry (IUPAC) (funkcia: titular member v divízii II anorganická chémia, associate member v medzidivíznej komisii pre terminológiu, symboly a nomenklatúru - Interdivisional Co)

prof. Ing. Dušan Galusek, DrSc.
- American Ceramic Society (funkcia: člen)
- European Society on Glass Science and Technology (funkcia: člen)

RNDr. Peter Komadel, DrSc.
- European Clay Groups Association (funkcia: predseda 2011-2015)
- The Clay Minerals Society (funkcia: člen)

Ing. Michal Korenko, PhD.
- International Union of Pure and Applied Chemistry (IUPAC) (funkcia: National Representative (NR) of Division I)

doc. Ing. Zoltán Lenčéš, PhD.
- American Ceramic Society (funkcia: člen)
- Ceramic Society of Japan (funkcia: člen)
- Council of the European Ceramic Society (funkcia: člen)
- European Ceramic Society (funkcia: člen)
- Materials Research Society (funkcia: člen)

RNDr. Jana Madejová, DrSc.
- The Clay Minerals Society (funkcia: člen)

Dr. Vladimír Malkin, DrSc.
- WATOC - World Association of Theoretical and Computational Chemists (funkcia: člen)

prof. RNDr. Jozef Noga, DrSc.
- International Academy of Quantum Molecular Sciences (funkcia: volený člen)
- World Association of Theoretical and Computational Chemists (funkcia: člen)

Ing. Martin Pentrák, PhD.
- The Clay Minerals Society (funkcia: člen)

Ing. Linda Pentráková, PhD.
- The Clay Minerals Society (funkcia: člen)

prof. RNDr. Pavol Šajgalík, DrSc.
- American Ceramic Society (funkcia: člen)
- Ceramic Society of Japan (funkcia: člen)
- Council of the European Ceramic Society (funkcia: člen)
- ECerS (funkcia: prezident)
- International Ceramic Federation (funkcia: člen predstavenstva)
- Materials Research Society (funkcia: člen)
- Permanent Executive Committee ECerS (funkcia: volený člen)
- World Academy of Ceramics (funkcia: volený člen)
- World Academy of Ceramics - Výberová komisia pre nových členov (funkcia: volený člen)

doc. Ing. Peter Šimurka, PhD.
- European Society on Glass Science and Technology (funkcia: člen)
- International Commission on Glass (funkcia: výkonný tajomník)

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

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

Peter Cherry,

- Center for Theoretical and Computational Chemistry (CTCC), Department of Chemistry, University of Tromsø, Tromsø, Norway, 1.8 - 23.8.2015. Pobyt sa uskutočnil v rámci riešenia 7FP EU projektu PITN-GA-2012-317127 (pNMR). Implemntácia lineárnej odozvy časovo závislej teórie funkcionálu hustoty (TDDFT) do kvantovo chémického programu ReSpect. (Implementation of the linear response time-dependent density functional theory (TDDFT) into the ReSpect-mDKS quantum chemical software package).

Helena Pálková

- Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, Krakow, Poľsko (13. – 23. 11. 2015) Pobyt sa uskutočnil v rámci medziakademickej spolupráce (MAD) medzi Ústavom anorganickej chémie SAV a ústavu PAV v Krakowe. Náplňou práce bolo uskutočnenie experimentov zahrnutých v spoločnom projekte „Organo-clays as intermediates for the synthesis of functional hybrid materials".

Anna Prnová

- Dep. Inorganic and Physical Chemistry, Gent University, Krijgslaan 281 (S3), 9000 Gent, Belgium, (17.5. - 4.6. 2015), pobyt sa uskutočnil v rámci medziakademickej spolupráce (MAD) medzi Ústavom anorganickej chémie SAV a Department of Inorganic and Physical Chemistry, Univerzity v Gente. Náplňou práce bola príprava vzoriek Y_2O_3-Fe_2O_3 a Y_2O_3-Al_2O_3 pomocou spray-drying zariadenia.

František Šimko

- CEMHTI-CNRS (Conditions Extrêmes et Matériaux: Haute Température et Irradiation), Orléans, France. 11.12.-15.12.2015. Spolupráca v rámci riešenia APVV projektu (SK-FR-2013-0039) o potenciálnom vplyve draslíka a rubídia na tvorbu oxofluorohlinitanových komplexov v tuhom stave.

Dlhodobé pobyty pracovníkov ústavu realizované na základe získania štipendií na riešenie projektov - nad tri mesiace

Peter Cherry

- NMR Research Group, Department of Physics and Chemistry, University of Oulu, Oulu, Finsko, 5.9.2015 – 7.12.2015. Pobyt sa uskutočnil v rámci riešenia 7FP EU projektu PITN-GA-2012-317127 (pNMR). Výskum konštánt jadrového spin-spin spriahnutia v paramagnetických systémoch. (Investigation of the paramagnetic enhancement of nuclear spin-spin coupling constants).

Martin Kontrík

- CEMHTI-CNRS (Conditions Extrêmes et Matériaux: Haute Température et Irradiation), Orléans, France. 10/2015 - 03/2016; výskumný pobyt bol podporovaný Národným štipendijným programom na podporu mobility študentov, doktorandov a vysokoškolských učiteľov. Pobyt je zameraný na in-situ NMR pri vysokých teplotách draselných fluoro-oxo-hlinitanových komplexov v KF-Al_2O_3 systéme.

Michal Korenko

- Engineering College, Valparaiso University, Valparaiso, Indiana, USA (04/2014 - 12/2016). Postdoktorandský študijny pobyt podporovaný projektom ARPA-E (US Department of Energy). Projekt je zameraný na vývoj a komercionalizáciu vysokoteplotnej solárnej elektrolýzy horčíka. Elektrolytická produkcia horčíka vychádza priamo z MgO rozpusteného vo fluoridovom elektrolyte. Časť energie

potrebnej na vysokoteplotnú elektrolýzu je dotovaná solárnym teplom v parabolickom solárnom reaktore, pričom tento prístup umožňuje integrovať k primárnej elektrolýze aj *in situ* rafináciu horčíka. Definitívnym cieľom projektu je nová, ekonomicky kompetitívna technológia, ktorá by bola schopná zlomiť dominanciu ekologicky a energeticky necitlivého *Pidgen procesu*, ktorým v súčasnosti Čína vyrába takmer 90% svetovej produkcie horčíka.

Marián Kucharík
- Primary Metal Technology (PMT) - Technology development, Hydro Aluminium a.s. Årdal, Nórsko, projektový inžinier (11/2008 – 12/2015). Výskum a vývoj technológie výroby hliníka Hall-Heroultovým procesom.

Martin Pentrák
- Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana, USA, Postdoctoral Research Associate, 04/2012 – 09/2016, výskum a vývoj nových progresívnych nanokompozitov na báze organoílov dôležitých pri riešení environmentálnych a priemyselných problémov, štúdium optických a termických vlastností prírodných nanomateriálov na báze ílových minerálov.

Linda Pentráková
- Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana, USA, Postdoctoral Research Associate, 06/2012 – 12/2015, výskum a vývoj nových progresívnych nanokompozitov na báze organoílov dôležitých pri riešení environmentálnych a priemyselných problémov, štúdium optických a termických vlastností prírodných nanomateriálov na báze ílových minerálov.

Lukáš Petra
- Sheffield Hallam University, Materials and Engineering Research Institute, United Kingdom. 10/2014 – 6/2015, výskumný pobyt bol podporovaný Národným štipendijným programom na podporu mobility študentov, doktorandov a vysokoškolských učiteľov. Spolupráca v rámci IN-CROWD projektu (Iodine Nanocomposite Controlled Release Open Wound Dressings), ktorý je zameraný na prípravu, charakterizáciu a použitie samovrstviacich filmov ako povrchových vrstiev obväzov, ktoré sú schopné ničiť baktérie rezistentné voči antibiotikám min 96 h.

Anna Prnová
- X-ray science division, Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois, USA, Fulbright grant 15-22-08: Structure of solids and liquids in the Y_2O_3-Fe_2O_3 and Y_2O_3-Ga_2O_3 systems by high energy X-ray diffraction and by Mossbauer spectroscopy, trvanie od: 11/2015 – 03/2016, skúmanie štruktúry a štruktúrnych zmien ytrito-železitých granátov a galito-ytritých granátov.

<u>Prednášky zahraničných pracovníkov, ktorí navštívili ÚACH SAV</u>

Prof. Yoshio Sakka, National Institute for Materials Science, Tsukuba, Japonsko,TEXTURE DEVELOPMENT AND SOME PROPERTIES OF FEEBLE MAGNETIC CERAMICS BY COLLOIDAL PROCESSING IN A STRONG MAGNETIC FIELD, 15. 05. 2015

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

Vedná politika ústavu reflektuje dlhodobé zámery, ako aj aktuálne trendy súvisiace so spoločenskou objednávkou na domácej a zahraničnej scéne. Je založená na inovatívnosti vedeckého smerovania, ambicióznosti vedeckých osobností, ako aj autonómnosti vedúcich vedeckých tímov. Správnosť tohto smerovania dokumentuje pozícia ústavu, ktorý je hodnotený na popredných priečkach vo všetkých procesoch hodnotenia v SAV.

Základnými a dominantnými cieľmi, ktorým sú podriadené všetky aspekty chodu ústavu, sú odborný rast, medzinárodná integrácia a spoločenské uplatnenie/úžitok výsledkov výskumu. Napĺňanie uvedených cieľov si vyžaduje komplexný prienik aspektov, ako sú:

- aktívna účasť na domácich a zahraničných projektoch,
- aktívna publikačná činnosť v medzinárodných časopisoch a prezentácia výsledkov výskumu na medzinárodných vedeckých fórach,
- zachovanie vekovej a odbornej kontinuity,
- vytvorenie podmienok pre vzdelávanie a odborný rast, PhD študentov aj mladých vedeckých pracovníkov, ale aj erudovaných vedeckých pracovníkov,
- aktívna účasť na vzdelávacom procese s dôrazom na druhý a tretí stupeň vysokoškolského vzdelania,
- technické zabezpečenie pre výskum,
- finančné zabezpečenie výskumu,
- personálna politika,
- zabezpečenie kontinuity vo oblasti vedenia organizačných štruktúr ústavu, vytvorenie podmienok pre manažérsky rast pracovníkov,
- diseminácia a popularizácia objektov a výsledkov výskumu v odbornej a laickej spoločnosti,
- spolupráca a kooperácia s domácimi a zahraničnými partnermi akademickými, ako aj priemyselnými,
- zabezpečenie fungovania administratívnych požiadaviek.

Projektové tímy

Štruktúra ústavu v sebe inherentne zahŕňa flexibilné projektové tímy, ktoré sú vytvárané s ohľadom na objektové, resp. metodické možnosti a schopnosti jednotlivcov spájajúcich sa účelovo pri príprave a riešení projektov MŠ SR (štátne programy, projekty ŠF), VEGA, APVV, rámcových programov EÚ, NATO a v spolupráci s domácimi a zahraničnými partnermi z priemyslu. Táto flexibilná projektová štruktúra umožňuje pracovníkom resp. odborným skupinám podieľať sa na príprave vnútroústavných alebo aj mimoústavných vedeckých zoskupení buď v rámci ústavu a SAV alebo aj mimo nich. Vedúci projektových tímov sú autonómni v rozhodovaní o spôsoboch riešenia projektu ako aj v nakladaní s finančnými prostriedkami v súlade s projektovými cieľmi a zmluvou.

Personálna politika

V oblasti personálnej politiky sa ústavu dlhodobo darí udržať relatívne nízky priemerný vek zamestnancov pod 46 rokov. Podpora zamestnávania mladých vedeckých pracovníkov patrí medzi prioritné úlohy vedenia ústavu. Pre zvýšenie počtu a motivácie mladých absolventov doktorandského štúdia, aby neodchádzali z oblasti vedy do finančne lukratívnejších zamestnaní, boli prijaté nasledujúce zásady personálnej politiky:

- Získavanie najlepších študentov na doktorandské štúdium vo vedných odboroch, ktoré má ústav akreditované ako externá vzdelávacia inštitúcia.
- Získavanie zahraničných doktorandov prostredníctvom projektov Marie Curie Research Training Network alebo iných schém podpory zahraničných študentov (napr. DAAD), v ktorých je ústav zapojený.
- Vysielanie čerstvých absolventov doktorandského štúdia na dlhodobé (najmenej 3 mesiace) pobyty do zahraničia, aby sa zoznámili s najmodernejšou prístrojovou technikou, laboratórnymi postupmi, ako aj metódami práce vo vyspelých pracoviskách v Európe a vo svete (najčastejšie Japonsko a USA).
- Organizovanie medzinárodných podujatí doma, ako aj vysielanie mladých vedeckých pracovníkov a aj doktorandov na renomované konferencie v zahraničí s cieľom získať skúsenosti s prezentovaním vedeckých výsledkov.
- Pozývanie renomovaných odborníkov zo zahraničia na prednášky pre doktorandov a zamestnancov ústavu.

S cieľom plnenia stanovených zásad personálnej politiky sa Ústav anorganickej chémie ako hostiteľská organizácia pridal k úspešným prijímateľom projektov mobilitného programu Slovenskej akadémie vied - SASPRO. V rámci mobilitnej schémy „Incoming“ určenej pre zahraničných vedcov koncom roka na ústav nastúpil uchádzač z Indie. Ďalší uchádzač zo Švédska bol v poslednom kole vyhodnotený ako úspešný žiadateľ. V rámci mobilitnej schémy „Reintegrácia“, v ktorej sú cieľovou skupinou občania Slovenskej republiky na ústav nastúpi jeden úspešný žiadateľ.

Technická infraštruktúra

Neoddeliteľnou súčasťou vedenej politiky je aj rozvoj infraštruktúry. Ústav cielene buduje svoju infraštruktúru na rôznych úrovniach cez laboratóriá na prípravu vzoriek až po laboratória na charakterizáciu pripravených materiálov. Vyžaduje si to dlhodobú aktivitu postupnej rekonštrukcie priestorov, ktorá je pre svoje špecifické požiadavky náročná ako finančne, tak aj časovo, pretože prebieha pri plnej prevádzke ostatných zariadení. Prístrojové vybavenie sleduje vzájomnú komplementaritu techník. Snahou je aj poskytovať voľné časové kapacity na merania pre partnerov na Slovensku, ako aj zapájanie ústavu prostredníctvom technickej infraštruktúry do medzinárodných zväzkov. Prostriedky na moderné zariadenia plynú predovšetkým z projektov štrukturálnych fondov.

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): Spoločná výchova doktorandov, spoločné riešenie projektov, spolupráca v pedagogickom procese
Začiatok spolupráce: 1990
Zameranie: vedecká spolupráca, účasť na Bc. a Mgr. výuke
Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do vzdelávania na III. stupni vysokoškolského štúdia v študijných programoch anorganická chémia a chemická fyzika. Spoločne sa riešia projekty VEGA a APVV. Prof. RNDr. J. Noga, DrSc., doc. RNDr. J. Bujdák, DrSc. a doc. RNDr. M. Drábik, CSc. majú hlavný úväzok na fakulte a čiastkový na ÚACH SAV. Prof. RNDr. J. Noga, DrSc. je externým členom Vedeckej rady ÚACH SAV. Doc. RNDr. Milan Drábik, CSc. je členom Akademického senátu PriF UK. Pracovníci ÚACH viedli na PríF UK v roku 2015 šiestich doktorandov.

Názov univerzity/vysokej školy a fakulty: Fakulta chemickej a potravinárskej technológie STU
Druh spolupráce (spoločné pracovisko alebo iné): Spoločné pracovisko, spoločná výchova doktorandov
Začiatok spolupráce: 1990
Zameranie: vedecká spolupráca
Zhodnotenie: Na základe dodatku k zmluve o zriadení spoločného pracoviska je FCHPT od roku 2008 členom konzorcia a spoluzriaďovateľom spoločného pracoviska, Centra kompetencie skla Vitrum Laugaricio – VILA. FCHPT STU je partnerom projektu APVV 0218-11 - Mechanizmy korózie a mikromechanické vlastnosti dentálnych materiálov a hlavným riešiteľom APVV projektu Polyaplikovateľné heterocykly - návrh štruktúry, syntéza a vlastnosti, v ktorom ÚACH vystupuje ako partner. Pracovníci ÚACH viedli na FCHPT v roku 2015 troch doktorandov.

Názov univerzity/vysokej školy a fakulty: Hutnícka fakulta TUKE
Druh spolupráce (spoločné pracovisko alebo iné): Spolupráca v pedagogickom procese
Začiatok spolupráce: 2000
Zameranie: vedecká spolupráca, účasť na Bc. a Mgr. výuke
Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do pedagogického procesu. Prof. RNDr. P. Šajgalík, DrSc. je členom vedeckej rady fakulty.

Názov univerzity/vysokej školy a fakulty: Fakulta priemyselných technológií TnUAD v Púchove
Druh spolupráce (spoločné pracovisko alebo iné): Spolupráca v pedagogickom procese
Začiatok spolupráce: 2011
Zameranie: vedecká spolupráca, účasť na Bc. a Ing. výuke
Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do vzdelávania na I. stupni štúdia v odbore Materiálová technológia 5.2.26, študijný program Materiály. V rámci projektu "Zvyšovanie kvality a kapacity ľudských zdrojov v oblasti výskumu a vývoja na TnUAD prostredníctvom vzdelávania, zahraničnej spolupráce a transferu odbornosti do praxe", ITMS kód 26110230118 zamestnanec ústavu V. Pavlík predniesol dve vyžiadané prednášky.

Názov univerzity/vysokej školy a fakulty: Trenčianska univerzita Alexandra Dubčeka v Trenčíne
Druh spolupráce (spoločné pracovisko alebo iné): Centrum kompetencie skla - Vitrum Laugaritio
Začiatok spolupráce: 1997
Zameranie: vedecká spolupráca
Zhodnotenie: Okrem spoločného pracoviska s TnU AD (Centrum kompetencie skla Vitrum Laugaritio) riešil ÚACH SAV v roku 2015 v spolupráci s touto univerzitou tri spoločné projekty VEGA a dva spoločné projekty APVV. Prof. Ing. P. Galusek, DrSc. prorektor pre vedu, výskum a medzinárodné vzťahy TnU AD je aj členom Vedeckej rady TnU AD a dvoch jej fakúlt (Fakulty zdravotníctva a Fakulty špeciálnej techniky), prof. Ing. M. Liška, DrSc. je externým členom Vedeckej rady ÚACH. Pracovníci centra, zamestnanci ÚACH, sa podieľajú na pedagogickej činnosti v rámci vysokoškolského štúdia v odbore "Chemické technológie" a doktorandského štúdia v odbore "Anorganická technológia.

Názov univerzity/vysokej školy a fakulty: Vysoká škola báňská - TU Ostrava, Česká republika
Druh spolupráce (spoločné pracovisko alebo iné): Spoločná výchova doktorandov, spoločné riešenie projektov
Začiatok spolupráce: 2010
Zameranie: vedecká spolupráca, výchova doktorandov
Zhodnotenie: Spolupráca VŠB a ÚACH je zameraná na výchovu mladých pracovníkov. Na ÚACH pokračovali vo svojom štúdiu dve doktorandky z VŠB Ostrava. Prof. RNDr. P. Šajgalík, DrSc. je členom Vedeckej rady FMMI VŠB; doc. Ing. Z. Lenčéš, PhD. je členom odborovej rady doktorandského študijného programu Materiálové vědy a inženýrství.

Názov univerzity/vysokej školy a fakulty: University of Ghent, Belgicko
Druh spolupráce (spoločné pracovisko alebo iné): Department of Inorganic and Physical Chemistry
Začiatok spolupráce: 2010
Zameranie: vedecká spolupráca
Zhodnotenie: Vedecká spolupráca pri príprave amorfných a polykryštalických materiálov sol-gel metódami v systémoch Al2O3-La2O3, Al2O3-La2O3-ZrO2, Al2O3-Y2O3. Skúmanie vlastností pripravených materiálov a spoločné publikácie.

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

6.3. Iná činnosť využiteľná pre potreby spoločenskej praxe

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

7.1. Spoločné pracoviská s aplikačnou sférou

Názov pracoviska: Spoločné pracovisko Ústavu anorganickej chémie Slovenskej akadémie vied a RONA, a.s.
Partner(i): Rona a.s., Lednické Rovne
Zameranie: Stimulácia, rozvoj a realizácia základného a aplikovaného výskumu a vývoja v oblastiach súvisiacich s existujúcou priemyselnou základňou SR
Rok založenia: 2011
Zhodnotenie: ÚACH v spolupráci s RONA v rámci Operačného programu VaV rieši projekt s názvom "Priemyselný výskum pre potreby zefektívnenia unikátnej technológie tavenia a tvarovania úžitkového skla", akronym PVTECHSKLO. Finančné prostriedky tohto projektu sú v celkovej výške 1 400 281 €, z čoho pre ÚACH SAV pripadne 436 700 €.

7.2. Kontraktový – zmluvný výskum (vrátane zahraničných kontraktov)

Názov kontraktu: MDF betóny - revízia, č. 90 KH / 2015
Partner(i): PC Ladce, a. s.
Začiatok spolupráce (v súlade s podpísaným kontraktom): 2015
Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2015
Objem získaných prostriedkov v bežnom roku (€): 6250
Stručný opis výstupu/výsledku: Optimalizácia surovinového zloženie zmesí H-cement a poly-P, optimalizovaný predpis metodiky MDF syntéz / podmienky syntéz pre prípravu/výrobu MDF materiálov na báze H-cementu. Zodpovedný riešiteľ: M. Drábik
Zhodnotenie: Expertíza vypracovaná na základe objednávky PC Ladce, a. s., č. 90 KH / 2015, 501/Mi/2015;

7.3. Iná činnosť využiteľná pre potreby hospodárskej praxe

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. Dušan Galusek, DrSc.	Slovenský metrologický ústav	člen vedeckej rady
Mgr. Stanislav Kedžuch, PhD.	Slovenská komisia chemickej olympiády	podpredseda
Ing. Michal Korenko, PhD.	Komisia pre námietky pri verejnom obstarávaní	externý člen
RNDr. Jana Madejová, DrSc.	Agentúra na podporu výskumu a vývoja	Člen rady pre prírodné vedy
prof. RNDr. Jozef Noga, DrSc.	Akreditačná komisia SR	člen pracovnej skupiny pre oblasť výskumu Chémia, chemická technológia a biotechnológie
prof. RNDr. Pavol Šajgalík, DrSc.	Výskumná agentúra SR	člen
	Technologická agentúra SR	člen
	Rada predsedov pracovných skupín pre prioritné oblasti aplikovaného výskumu a experimentálneho vývoja	predseda
	Komisia MŠ pre prioritné oblasti aplikovaného výskumu a experimentálneho vývoja v SR - materiálový výskum a nanotechnológie	člen pracovnej skupiny
	Pandemická komisia MZ SR	člen
	Komisia ministra školstva pre udeľovanie Ceny ministra školstva	člen
	Slovenská komisia pre vedecké hodnosti (SKVH)	podpredseda

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

Názov expertízy: Autor úloh Chemickej olympiády
Adresát expertízy: MŠ SR
Spracoval: Mgr. Stanislav Kedžuch, 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
prof. RNDr. Pavol Šajgalík, DrSc.	Rada vlády pre výskum a inovácie	podpredseda
	Ministerstvo školstva, vedy, výskumu a športu SR	predseda Rady predsedov pre priority výskumu

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	Typ[1]	Názov	Miesto zverejnenia	Dátum / počet za rok
Miroslav Boča	IN	Rekultivácia skládky v Istebnom alebo ničnerobenie. Čo je lepšie?	http://otvoreneotroske.sk	8.4.2015
Miroslav Boča	PB	Chémia v každodennom živote	2 ZŠ v Dúbravke, ZŠ Malacky, ZŠ Pezinok	4
Milan Drábik	PB	Vzdelávania mladých ľudí o vode - medzinárodný seminár VODA V MESTE, 2 prednášky	Zrkadlová sieň Primaciálneho paláca, Bratislava	3.11.2015
Dušan Galusek	TV	relácia VAT - Luminiscenčné materiály pre energeticky úsporné osvetľovacie zdroje	STV 2	5.1.2015
Dušan Galusek	TV	Výskumníci v Trenčíne skúšajú inovácie	STV 1	8.8.2015
Miroslav Hnatko	TV	Relácia VAT: na tému Laboratórny žiarový lis ONE	STV 2	11.4.2015
Miroslav Hnatko	TV	Relácia Veda na dosah: na tému Využitie konštrukčnej keramiky v bežnom živote	TA3	2.6.2015
Viliam Pavlík	PB	Korodujem, korodueš, korodujeme	Fakulta priemyselných technológií TnUAD, Púchov	12.11.2015
Pavol Šajgalík	TL	Šajgalík: Čaká nás najväčšia zmena od roku 1989	denník Pravda	12.1.2015

[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	3	tlač	1	TV	4
rozhlas	0	internet	1	exkurzie DOD	1
publikácie	0	multimediálne nosiče	0	dokumentárne filmy	0
iné Noc výskumníka	1				

9.2. Vedecko-organizačná činnosť

Tabuľka 9c Vedecko-organizačná činnosť

Názov podujatia	Domáca/ medzinárodná	Miesto	Dátum konania	Počet účastníkov
Ílové minerály a vybrané nerudné suroviny v materiálovom výskume, priemyselných aplikáciách a životnom prostredí	domáca	Smolenice, Slovensko	14.05.-15.05.2015	38
Tableware glass melting and forming	medzinárodná	Trenčianske Teplice, Slovensko	19.02.-20.02.2015	56
8th Workshop on Modern Methods in Quantum Chemistry	medzinárodná	Mariapfarr, Rakúsko	22.02.-27.02.2015	38
Engineering Ceramics 2015 –	medzinárodná	Smolenice,	10.05.-14.05.2015	86

Materials for better life		Slovensko		
6th Japan-Czech-Slovak (JCS) International Symposium on Theoretical Chemistry	medzinárodná	Smolenice, Slovensko	11.10.-15.10.2015	80

9.3. Účasť na výstavách

Názov výstavy: **Noc výskumníka 2015**
Miesto konania: Bratislava, Stará tržnica
Dátum: 2015
Zhodnotenie účasti: Prezentácia výskumu a výsledkov oddelenia keramiky, oddelenia hydrosilikátov a oddelenia taveninových sústav (O. Hanzel, R. Bystrický, M. Hičák, V. Bizovská, P. Boháč, M. Slaný, L. Petra, M. Kontrík)

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	4	0

9.5. Členstvo v redakčných radách časopisov

doc. Ing. Miroslav Boča, PhD.
- Chemical Papers (funkcia: Editorial Advisory Board od 9/2013)

doc. RNDr. Juraj Bujdák, DrSc.
- ChemistrySelect (Wiley-VCH) (funkcia: člen redakčnej rady)

doc. RNDr. Milan Drábik, CSc.
- Ceramics-Silikáty (funkcia: člen)
- ChemZi (funkcia: člen)

prof. Ing. Dušan Galusek, DrSc.
- Ceramics-Silikáty (funkcia: člen)
- New Journal of Glass and Ceramics (funkcia: člen)

RNDr. Peter Komadel, DrSc.
- Applied Clay Science (funkcia: člen)
- Clay Minerals (funkcia: člen)
- Geologica Carpathica (funkcia: člen)

prof. Ing. Marek Liška, DrSc.
- Ceramics - Silikáty (funkcia: člen)
- European Journal of Glass Science and Technology (funkcia: regional editor)
- International Journal of Applied Glass Science (funkcia: člen)
- Sklář a keramik (funkcia: člen)

RNDr. Jana Madejová, DrSc.
- Clays and Clay Minerals (funkcia: associate editor)

prof. RNDr. Pavol Šajgalík, DrSc.
- Ceramics-Silikáty (funkcia: člen)
- Journal of Asian Ceramic Society (funkcia: spolueditor)
- Journal of Ceramic Science and Technology (funkcia: člen)
- Keramický Zpravodaj (funkcia: člen)

- Processing and Application of Ceramics (funkcia: člen)

9.6. Činnosť v domácich vedeckých spoločnostiach

Mgr Valéria Bizovská, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová spoločnosť (funkcia: člen)

doc. Ing. Miroslav Boča, PhD.
- Humboldtov klub v SR (funkcia: člen)
- Slovenská chemická spoločnosť (funkcia: člen)

Mgr. Peter Boháč
- Slovenská ílová spoločnosť (funkcia: člen)

doc. RNDr. Juraj Bujdák, DrSc.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Roman Bystrický, PhD.
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Mgr. Adriana Czímerová, PhD.
- Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Alexander Čeklovský, PhD.
- Slovenská spektroskopická spoločnosť (funkcia: člen)

doc. RNDr. Milan Drábik, CSc.
- Slovenská chemická spoločnosť (funkcia: člen Predsedníctva SCHS (od r. 2009))
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenský národný komitét IUPAC (funkcia: predseda)

prof. Ing. Dušan Galusek, DrSc.
- Humboldtov klub v SR (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská sklárska spoločnosť (funkcia: člen predstavenstva, vedecký tajomník)

Ing. Dagmar Galusková, PhD.
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská Sklárska spoločnosť (funkcia: člen predstavenstva)

Ing. Veronika Gurišová
- Slovenská chemická spoločnosť (funkcia: člen)

doc. Ing. Miroslav Hnatko, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Ing. Mária Chromčíková, PhD.
- Česká sklárska spoločnosť (funkcia: člen)
- Slovenská sklárska spoločnosť (funkcia: člen)

Mgr. Ľuboš Jankovič, PhD.
- Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Stanislav Kedžuch, PhD.
- Slovenská chemická spoločnosť (funkcia: člen predsedníctva)

RNDr. Peter Komadel, DrSc.
- Slovenská chemická spoločnosť (funkcia: člen výboru Odbornej skupiny anorganická chémia)
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová spoločnosť (funkcia: podpredseda)
- Učená spoločnosť SAV (funkcia: člen)

Ing. Michal Korenko, PhD.
- Slovenská chemická spoločnosť (funkcia: predseda revíznej komisie)
- Slovenská nukleárna spoločnosť (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská spoločnosť pre povrchové úpravy (funkcia: člen)

Ing. Jozef Kraxner, PhD.
- Slovenská Sklárska spoločnosť (funkcia: člen)

Ing. Blanka Kubíková, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

Ing. Marián Kucharík, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

doc. Ing. Zoltán Lenčéš, PhD.
- Humboldtov klub v SR (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen výboru)

prof. Ing. Marek Liška, DrSc.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská sklárska spoločnosť (funkcia: člen)

RNDr. Jana Madejová, DrSc.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová spoločnosť (funkcia: predseda)
- Učená spoločnosť SAV (funkcia: člen)

Ing. Zuzana Netriová, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

prof. RNDr. Jozef Noga, DrSc.
- Humboldtov klub v SR (funkcia: člen)
- Slovenská akademická spoločnosť (funkcia: podpredseda)
- Učená spoločnosť SAV (funkcia: predseda)

Ing. Helena Pálková, PhD.
- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Viliam Pavlík, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

Mgr. Lukáš Petra
- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Anna Prnová, PhD.

- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská Sklárska spoločnosť (funkcia: člen)

Ing. Samuel Sas
- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Jaroslav Sedláček, PhD.
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Ing. Eva Scholtzová, CSc.
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Michal Slaný
- Slovenská ílová spoločnosť (funkcia: člen)

prof. RNDr. Pavol Šajgalík, DrSc.
- Humboldtov klub v SR (funkcia: člen)
- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: predseda)
- Slovenská sklárska spoločnosť (funkcia: člen predstavenstva)
- Učená spoločnosť SAV (funkcia: člen)

Ing. František Šimko, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

doc. Ing. Peter Šimurka, PhD.
- Slovenská sklárska spoločnosť (funkcia: predseda)
- Zväz slovenských vedecko-technických spoločností (funkcia: člen rady)

Mgr. Peter Švančárek, PhD.
- Slovenská sklárska spoločnosť (funkcia: člen)

Ing. Jana Valúchová, PhD.
- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Zuzana Vasková, PhD.
- Slovenská chemická spoločnosť (funkcia: člen)

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

ÚACH SAV v roku 2015 organizoval štyri vedecké podujatia s medzinárodnou účasťou. Jedným z najväčších, čo sa týka počtu účastníkov, bola Engineering Ceramics 2015 – Materials for better life, zameraná na nové trendy v oblasti výskumu pokročilých keramických materiálov, ktorú už tradične organizuje ústav spolu so Slovenskou silikátovou vedecko-technickou spoločnosťou každé štyri roky. Ďalším podujatím so širokou medzinárodnou účasťou bol 6th Japan-Czech-Slovak (JCS) International Symposium on Theoretical Chemistry v Smoleniciach, pri príprave ktorého ústav vystupoval ako spoluorganizátor.

Ústav sa zúčastnil v roku 2015 aj Noci výskumníka, na ktorom mladí vedeckí pracovníci a PhD. študenti prezentovali populárno-náučnou formou výskum jednotlivých oddelení.

Dňa 10.11.2015 už tradične zorganizoval Ústav anorganickej chémie SAV v rámci Týždňa vedy a techniky na Slovensku „Deň otvorených dverí ÚACH SAV“, na ktorý boli pozvaní študenti základných, stredných ako aj vysokých škôl zo Slovenska. Pre mladých návštevníkov bola pripravená prezentácia s názvami „Využitie tavenín v praxi“. Prehliadka ústavu pre študentov potom pokračovala vo vybraných laboratóriách,

kde im mladí vedeckí pracovníci ukazovali vedecké prístroje, rozprávali o ich praktickom využití, prípadne im názorne aj toto využitie prezentovali. Na mnohých stanovištiach im zároveň predviedli efektné a zaujímavé chemické experimenty. Návštevníkov zaujala prezentácia pripravená na skenovacom elektrónovom mikroskope pod názvom „Elektrónová streľba na živé organizmy“ ako aj ukážky tavenia skla, zmrazovania rôznych objektov tekutým dusíkom. Dňa otvorených dverí sa zúčastnilo 138 študentov z bratislavských aj mimobratislavských stredných škôl (Liptovský Mikuláš, Levice) ako aj niekoľko študentov z PríF UK Bratislava.

10. Činnosť knižnično-informačného pracoviska

10.1. Knižničný fond

Tabuľka 10a Knižničný fond

Knižničné jednotky spolu		7562
z toho	knihy a zviazané periodiká	7562
	audiovizuálne dokumenty	
	elektronické dokumenty (vrátane digitálnych)	
	mikroformy	
	iné špeciálne dokumenty - dizertácie, výskumné správy	
Počet titulov dochádzajúcich periodík		2
z toho zahraničné periodiká		2
Ročný prírastok knižničných jednotiek		8
v tom	kúpou	8
	darom	
	výmenou	
	bezodplatným prevodom	
Úbytky knižničných jednotiek		
Knižničné jednotky spracované automatizovane		

10.2. Výpožičky a služby

Tabuľka 10b Výpožičky a služby

Výpožičky spolu		51
z toho	odborná literatúra pre dospelých	11
	výpožičky periodík	40
	prezenčné výpožičky	
MVS iným knižniciam		
MVS z iných knižníc		
MMVS iným knižniciam		
MMVS z iných knižníc		
Počet vypracovaných bibliografií		
Počet vypracovaných rešerší		

10.3. Používatelia

Tabuľka 10c Užívatelia

Registrovaní používatelia	
Návštevníci knižnice spolu (bez návštevníkov podujatí)	59

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 €	573,96

10.5. Iné informácie o knižničnej činnosti

11. Aktivity v orgánoch SAV

11.1. Členstvo vo Výbore Snemu SAV

11.2. Členstvo v Predsedníctve SAV a vo Vedeckej rade SAV

prof. RNDr. Pavol Šajgalík, DrSc.
- predseda VR SAV

11.3. Členstvo vo vedeckých kolégiách SAV

doc. Ing. Miroslav Boča, PhD.
- VK SAV pre chemické vedy (člen)

RNDr. Peter Komadel, DrSc.
- VK SAV pre chemické vedy (člen)

RNDr. Jana Madejová, DrSc.
- VK SAV pre chemické vedy (člen)

prof. RNDr. Jozef Noga, DrSc.
- VK SAV pre chemické vedy (člen)

prof. RNDr. Pavol Šajgalík, DrSc.
- VK SAV pre chemické vedy (člen)

11.4. Členstvo v komisiách SAV

doc. Ing. Miroslav Boča, PhD.
- Komisia SAV pre infraštruktúru a štrukturálne fondy (člen)

11.5. Členstvo v orgánoch VEGA

doc. Ing. Miroslav Boča, PhD.
- Komisia VEGA č. 3 pre chemické vedy, chemické inžinierstvo a biotechnológie (predseda)

doc. Ing. Zoltán Lenčéš, PhD.
- Komisia VEGA č. 7 pre strojárstvo a príbuzné odbory informačných a komunikačných technológií a materiálové inžinierstvo (člen)

RNDr. Jana Madejová, DrSc.
- Komisia VEGA č. 3 pre chemické vedy, chemické inžinierstvo a biotechnológie (člen)

Dr. Oľga Malkin, DrSc.
- -Komisia VEGA č. 3 pre chemické vedy, chemické inžinierstvo a biotechnológie (člen)

12. Hospodárenie organizácie

12.1. Výdavky RO SAV

Tabuľka 12a Výdavky RO SAV (v €)

V ý d a v k y	Skutočnosť k 31.12.2015 spolu	v tom:			
		zo ŠR	z toho:	z mimorozp. zdrojov	z toho:
			ŠF EÚ vr. spolufinan .zo ŠR		ŠF EÚ vr. spolufinan.zo ŠR
Výdavky spolu	2 446 023	1 509 333	373 027	936 690	540 276
Bežné výdavky	1 969 156	1 464 159	332 047	504 997	113 791
v tom:					
mzdy (610)	869 493	723 625	111 533	145 868	15 216
poistné a príspevok do poisťovní (620)	307 964	248 666	38 981	59 298	18 034
tovary a služby (630)	791 699	491 868	181 532	299 831	80 541
z toho: časopisy	973	952	0	21	0
VEGA projekty	123 651	123 651	0	0	0
MVTS projekty	69 492	69 492	0	0	0
CE	0	0	0	0	0
vedecká výchova	59 706	59 706	0	0	0
bežné transfery (640)	129 408	57 805	0	71 603	0
z toho: štipendiá	56 266	56 266	0	0	0
transfery partnerom projektov	73 232	1 539	0	71 603	0
Kapitálové výdavky	476 867	45 174	0	431 693	426 485
v tom:					
obstarávanie kapitálových aktív	476 867	45 174	40 980	431 693	426 485
kapitálové transfery	0	0	0	0	0
z toho: transfery partnerom projektov	0	0	0	0	0

12.2. Príjmy RO SAV

Tabuľka 12b Príjmy RO SAV (v €)

P r í j m y	**Skutočnosť k 31.12.2015 spolu**	**v tom:**	
		rozpočtové	**z mimorozp. zdrojov**
Príjmy spolu	948 203	11 513	936 690
Nedaňové príjmy	948 203	11 513	936 690
v tom:			
príjmy z prenájmu			
príjmy z predaja výrobkov a služieb	9 780	9 780	
iné	938 423	1 733	936 690
Granty a transfery (mimo zdroja 111)	936 690		936 690
v tom:			
tuzemské	816 330	0	816 330
z toho: APVV	198 286	0	198 286
iné	618 044	0	618 044
zahraničné	120 360	0	120 360
z toho: projekty rámcového programu EÚ	93 726	0	93 726
iné	26 634	0	26 634

13. Nadácie a fondy pri organizácii SAV

14. Iné významné činnosti organizácie SAV

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

15.1. Domáce ocenenia

15.1.1. Ocenenia SAV

Bujdák Juraj
Čestná plaketa SAV Dionýza Štúra
Oceňovateľ: Predsedníctvo SAV
Opis: Ocenenie za zásluhy v prírodných vedách, v odbore anorganickej, materiálovej a fyzikálnej chémie

Komadel Peter
Medaila SAV za podporu vedy
Oceňovateľ: Predsedníctvo SAV

Lenčéš Zoltán
Čestná plaketa SAV Dionýza Ilkoviča
Oceňovateľ: Predsedníctvo SAV
Opis: Ocenenie za zásluhy vo fyzikálno-chemických vedách, v odbore anorganickej a materiálovej chémie

15.1.2. Iné domáce ocenenia

Madejová Jana
Prémia za trojročný vedecký ohlas (1. miesto)
Oceňovateľ: Literárny fond, Sekcia pre vedeckú a odbornú literatúru a počítačové programy
Opis: Prejav verejného uznania za výrazný vedecký ohlas za predchádzajúce tri roky.

Šajgalík Pavol
Rad Ľudovíta Štúra III. triedy za mimoriadne zásluhy o rozvoj vedy, techniky a školstva
Oceňovateľ: Prezident SR
Opis: V Rytierskej sieni Bratislavského hradu udelil v utorok 13. januára prezident Andrej Kiska najvyššie štátne vyznamenania desiatim osobnostiam kultúrneho, vedeckého a spoločenského života.

15.2. Medzinárodné ocenenia

Malkin Vladimír
August-Wilhelm Scheer visiting profesor@TUM
Oceňovateľ: Technical University of Munich (president)
Opis: The Technical University of Munich honored the laureate as a guest scientist at institution. Devolopment of collaborative activities they contribute to the international reputation of university

Šajgalík Pavol
Čestný doktorát Technickej univerzity Ostrava
Oceňovateľ: Rektorát univerzity

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)

17. Problémy a podnety pre činnosť SAV

Zásadný problém, ktorý narastá niekoľko rokov a v roku 2015 sa prejavil bez náznakov zlepšenia, je absurdný nárast administratívnych nárokov na všetkých úrovniach. Dominuje im oblasť verejného obstarávania. Pre potreby naplnenia legislatívnych povinností ústavu v oblasti verejného obstarávania je jeden plný úväzok pre administratívneho pracovníka málo.

Navyše, mzdové prostriedky ústavu neumožňujú rozšírenie administratívy ani o toho jedného pracovníka. Výsledkom je, že potrebnú aktivitu vykonáva približne 5 vedeckých pracovníkov nad rámec alebo na úkor svojich odborných aktivít. Táto situácia je absolútne neúnosná. Deklarovaná snaha PSAV pomôcť ústavom v tejto situácii je vítaná, ale stále nie je naplnená.

Jednou z možností, ako by mohlo Predsedníctvo pomôcť ústavom s prebujnelou administratívou je zabezpečiť poistenie majetku (hlavne z dôvodu požiadavky VA) pre všetky ústavy centrálne, čo by ústavy výrazne odbremenilo a pravdepodobne by sa podarilo vyrokovať nižšie ceny na poistné zmluvy od jedného dodávateľa pre väčšie množstvo prístrojov. Okrem toho chýbajú z pozície P SAV aj ďalšie aktivity v rovine všeobecných usmernení, okrem iného napr. usmernenia a prípadne školenia ako postupovať pri aplikácií elektronického trhoviska.

Hlavnou pracovnou náplňou vedeckého pracovníka by mal byť výskum. Toto nie je možné naplniť minimálne z dvoch dôvodov. Prvým je už spomínaná abnormálna a nezmyselná administratívna záťaž vedeckých pracovníkov. Druhým je absencia skutočnej podpory vedy politickými „špičkami“. V tomto sklamali všetky doterajšie vlády a parlamenty Slovenska. Fakty, ktoré hovoria o tom, že výzvy na podávanie APVV projektov sú nedostatočne kryté, svedčia len o tom, že reči politikov o podpore vedy sú len prázdne slová. V tejto situácii nevieme navrhnúť žiadne aktivity ako s týmto úspešne bojovať.

Nutnosť transformácie SAV je síce nespochybniteľná, ale sprievodné javy k tomuto procesu (problém ESO ako aktivita štátu vs. spájanie ústavov ako aktivita SAV) vyvolávajú množstvo otázok a pochybností. V tejto neprehľadnej situácii sa netreba čudovať absencii akejkoľvek ochoty aktívne participovať na požadovaných zmenách. Ak je ústav oslovený, že sa má zapojiť do fúznych procesov, je potrebné k tejto výzve pripojiť aj veľmi konkrétne návrhy legislatívnych rámcov tejto zmeny. Doteraz používané argumenty napr. o náraste sily väčších celkov sa javia byť v rovine želaní a predpokladov. Nejasná situácia otvára priestor pre špekulácie, čo vedie následne k možno nepodloženým fámam a zneisťovaniu zamestnancov. Celú situáciu dotvárajú udalosti, ktoré vyústili k zablokovaniu procesu transformácie ústavov na verejno-výskumné inštitúcie.

Správu o činnosti organizácie SAV spracoval(i):

RNDr. Jana Madejová, DrSc., 02/59410406
Ing. Helena Pálková, PhD., 02/59410485

Riaditeľ organizácie SAV	**Predseda vedeckej rady**
.....	.....
doc. Ing. Miroslav Boča, PhD.	RNDr. Jana Madejová, DrSc.

Prílohy

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.	doc. RNDr. Juraj Bujdák, DrSc.	50	0.50
2.	prof. Ing. Dušan Galusek, DrSc.	55	0.55
3.	RNDr. Peter Komadel, DrSc.	100	1.00
4.	prof. Ing. Marek Liška, DrSc.	45	0.45
5.	RNDr. Jana Madejová, DrSc.	100	1.00
6.	Dr. Oľga Malkin, DrSc.	100	1.00
7.	Dr. Vladimír Malkin, DrSc.	100	1.00
8.	prof. RNDr. Jozef Noga, DrSc.	53	0.53
9.	prof. RNDr. Pavol Šajgalík, DrSc.	55	0.55
Vedúci vedeckí pracovníci CSc., PhD.			
1.	doc. Ing. Miroslav Boča, PhD.	100	1.00
Samostatní vedeckí pracovníci			
1.	doc. Ing. Tomáš Bučko, PhD.	25	0.25
2.	Mgr. Adriana Czímerová, PhD.	100	1.00
3.	doc. RNDr. Milan Drábik, CSc.	50	0.50
4.	doc. Ing. Miroslav Hnatko, PhD.	100	1.00
5.	Ing. Mária Chromčíková, PhD.	100	1.00
6.	Mgr. Ľuboš Jankovič, PhD.	100	1.00
7.	Mgr. Stanislav Kedžuch, PhD.	100	1.00
8.	Ing. Michal Korenko, PhD.	100	0.00
9.	doc. Ing. Zoltán Lenčéš, PhD.	100	1.00
10.	prof. Ing. Pavel Mach, CSc.	25	0.25
11.	Ing. Helena Pálková, PhD.	100	1.00
12.	Ing. Jaroslav Sedláček, PhD.	100	1.00
13.	Ing. Eva Scholtzová, CSc.	100	1.00
14.	RNDr. Ľubomír Smrčok, CSc.	100	1.00
15.	Ing. František Šimko, PhD.	100	1.00
16.	doc. Ing. Peter Šimurka, PhD.	100	0.91
17.	Mgr. Peter Švančárek, PhD.	100	1.00
18.	Ing. Štefan Varga, CSc.	100	1.00

Vedeckí pracovníci			
1.	Mgr Valéria Bizovská, PhD.	100	1.00
2.	Mgr. Roman Bystrický, PhD.	120	1.20
3.	Mgr. Alexander Čeklovský, PhD.	100	1.00
4.	Ing. Ondrej Hanzel, PhD.	100	1.00
5.	Ing. Jozef Chovanec, PhD.	100	1.00
6.	Ing. Jozef Kraxner, PhD.	10	0.40
7.	Ing. Blanka Kubíková, PhD.	100	1.00
8.	Ing. Marián Kucharík, PhD.	100	0.00
9.	Mgr Marián Matejdes, PhD.	100	0.33
10.	Ing. Monika Michálková, PhD.	70	0.00
11.	Ing. Jarmila Mlynáriková, PhD.	100	1.00
12.	Ing. Zuzana Netriová, PhD.	100	1.00
13.	Ing. Milan Parchovianský, PhD	100	1.00
14.	Ing. Viliam Pavlík, PhD.	100	1.00
15.	Ing. Martin Pentrák, PhD.	100	0.00
16.	Ing. Linda Pentráková, PhD.	100	0.00
17.	Ing. Anna Prnová, PhD.	100	0.83
18.	Dr. Niketan Sarabhai Patel	100	0.16
19.	Ing. Jana Valúchová, PhD.	100	1.00
20.	Ing. Zuzana Vasková, PhD.	100	0.08
Odborní pracovníci s VŠ vzdelaním			
1.	Ing. Katarína Faturíková, PhD.	40	0.20
2.	Ing. Veronika Gurišová	100	1.00
3.	Ing. Eva Hadzimová	100	1.00
4.	Ing. Ingrid Hierwegová	57	0.57
5.	Mgr. Peter Cherry	100	1.00
6.	Ing. Hana Kaňková, PhD.	20	0.20
7.	Mgr. Lenka Kaplanová	50	0.75
8.	Ing. Iveta Macková	100	1.00
9.	Ing. Eva Mikšíková	125	1.25
10.	Ing. Ján Piško	100	1.00
11.	Ing. Jozef Priščák	100	1.00
12.	Ing. Jaroslav Rusnák, PhD.	33	0.33
13.	Mgr. Bc. Marica Satinová	100	1.00
14.	Mgr. Zuzana Strapatá	100	0.95

Odborní pracovníci ÚSV			
1.	Miroslav Baďura	20	0.20
2.	Iveta Bouadjenak	100	1.00
3.	Jaromíra Dankovičová	125	1.25
4.	Jarmila Heinleinová	100	1.00
5.	Miriam Hnatková	100	0.45
6.	Anna Jurová	100	1.00
7.	Magdaléna Kňazovičová	100	1.00
8.	Anna Kovárová	100	1.00
9.	Jozef Sitár	100	1.00
10.	Anna Škumátová	100	1.00
11.	Alexandra Tonkovičová	100	1.00
Ostatní pracovníci			
1.	Dana Matejkinová	100	1.00
2.	Terézia Pírová	100	1.00

Zoznam zamestnancov, ktorí odišli v priebehu roka

	Meno s titulmi	**Dátum odchodu**	**Ročný prepočítaný úväzok**
Samostatní vedeckí pracovníci			
1.	Ing. Róbert Klement, PhD.	30.4.2015	0.09
Vedeckí pracovníci			
1.	Ing. Juraj Brtko, CSc.	31.10.2015	0.67
2.	Ing. Marián Gall, PhD.	30.6.2015	0.50
3.	RNDr. Miroslav Holubec, CSc	31.10.2015	0.43
4.	Ing. Branislav Hruška, PhD.	31.8.2015	0.66
5.	Ing. Jozef Kraxner, PhD.	31.12.2015	-
6.	Ing. Milan Parchovianský, PhD	31.12.2015	-
7.	doc. Ing. Alfonz Plško, CSc.	30.4.2015	0.09
8.	Ing. Martin Vitkovič, PhD.	30.6.2015	0.50
Odborní pracovníci s VŠ vzdelaním			
1.	Ing. Katarína Faturíková, PhD.	31.12.2015	-
2.	Ing. Tomáš Hanulík	30.6.2015	0.14
3.	Ing. Ingrid Hierwegová	31.12.2015	-
4.	RNDr. Klára Hrnčiarová	30.6.2015	0.25
5.	MSc. Ismail Ibrahim	30.10.2015	0.33
6.	Ing. Hana Kaňková, PhD.	31.12.2015	-

7.	Mgr. Lenka Kaplanová	31.12.2015	-
8.	Mgr. Natália Kraxnerová	30.11.2015	0.52
9.	Ing. Magdaléna Lissová, PhD.	31.5.2015	0.18
10.	Ing. Svetozár Luther	30.10.2015	0.67
11.	Ing. Milan Rešetka	31.10.2015	0.67
12.	Ing. Zuzana Slobodová	30.6.2015	0.50
13.	Ing. Katarína Zeleníková	30.6.2015	0.15
Odborní pracovníci ÚSV			
1.	Zora Lukáčová	30.6.2015	0.50

Zoznam doktorandov

	Meno s titulmi	**Škola/fakulta**	**Študijný odbor**
Interní doktorandi hradení z prostriedkov SAV			
1.	Mgr. Peter Boháč	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
2.	Ing. Michal Hičák	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
3.	Mgr. Marcela Hrdá	Prírodovedecká fakulta UK	4.1.11 chemická fyzika
4.	Mgr. Martin Kontrík	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
5.	Ing. Stanislav Mikušínec		
6.	Mgr. Lukáš Petra	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
7.	Ing. Michal Slaný	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
8.	Ing. Michal Šimurda	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
Interní doktorandi hradení z iných zdrojov			
1.	Ing. Christina Atzenhofer	Montanuniversitaet Leoben, Rakúsko	
2.	Peter John Cherry	Prírodovedecká fakulta UK	4.1.11 chemická fyzika
Externí doktorandi			
1.	Ing. Katarína Müllerová	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály

***Príloha B* - Projekty riešené v organizácii**

Medzinárodné projekty

Programy: Medziakademická dohoda (MAD)

1.) Organo-íly ako medzistupeň pre prípravu nových hybridných materiálov s funkčnými vlastnosťami *(Organo-clays as intermediates for the synthesis of functional hybrid materials)*

Zodpovedný riešiteľ:	Helena Pálková
Trvanie projektu:	1.1.2013 / 31.12.2015
Evidenčné číslo projektu:	SAV-PAV 14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Poľsko: 1
Čerpané financie:	

Dosiahnuté výsledky:
Na vzorkách montmorillonitu sa realizovala príprava hybridných materiálov s použitím polymérneho poly-katiónu – poly-(diallyldimethylamóiového). Materiál sa následne použil ako nosič/stabilizátor nano-častíc ruténia na vzorke. Aplikovali sa rôzne podmienky prípravy vzoriek, napríklad výber rôzneho typu ílového minerálu, pomer ílový minerál/poly-katión atď. s cieľom optimalizácie výsledných vlastností. Pripravené vzorky sa použili v testovacích reakciách na ich katalytickú aktivitu. Na vzorkách montmorillonitu modifikovanom kvartérnymi fosfóniovým a amóniovým katiónom sa po reakcii v kyslom prostredí skúmal zmeny v termickej stabilite systému organický katión - ílový minerál.

Publikácie:
1/ M. ZIMOWSKA - J. GURGUL - H. PÁLKOVÁ - Z. OLEJNICZAK - K. ŁĄTKA, Structural rearrangements in Fe-porous clay heterostructures composites derived from Laponite® - spectroscopic studies, Physical Chemistry Chemical Physics (odoslané v decembri).
Prezentácia na konferenciách:
2/ H. PÁLKOVÁ - M. ZIMOWSKA - Ľ. JANKOVIČ - B. SULIKOWSKI - E.M. SERWICKA - J. MADEJOVÁ Stability of tetrabutyl-phosphonium and -ammonium modified montmorillonite in inorganic acid. In EUROCLAY 2015, 5th - 10th July 2015, Edinburgh, Scotland, book of abstracts, p. 335, oral presentation.
3/ M. ZIMOWSKA - H. PÁLKOVÁ - Ľ. JANKOVIČ - J. MADEJOVÁ - E.M. SERWICKA, XLVI Polish Annual Conference on Catalysis, Kraków, Poland, 16. - 18.3.2015, p. 320-321, poster.

Programy: Medzivládna dohoda

2.) Nové anorganické fosfory bez obsahu prvkov vzácnych zemín pre energeticky úsporné osvetľovacie zdroje *(New rare earth-free inorganic phosphors for energy-saving lighting applications)*

Zodpovedný riešiteľ:	Dušan Galusek
Trvanie projektu:	1.1.2013 / 31.12.2015
Evidenčné číslo projektu:	SAS-NSC JRP 2012/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	2 - Taiwan: 2
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 22000 €

Dosiahnuté výsledky:
V rámci projektu sa pripravilo niekoľko hostiteľských sklených hlinitano-kerimičitanových matríc so zložením identickým so zložením kryštalického gelenitu a dopované prechodnými prvkami, resp. kodopované kombináciou prechodného prvku s malým množstvom oxidu vzácnej zeminy ako senzitizéra. Pripravili sa aj viaceré

ytrito-hlinitanokremičitanové sklá dopované kovmi vzácnych zemín a určil sa kinetické parametre kryštalizácie týchto skiel a vplyv priebehu kryštalizácie a fázového zloženia na luminiscenčné vlastnosti. Pripravil sa aj rad luminoforov na báze wilemitu s vysokou účinnosťou luminiscencie, porovnateľnou, alebo vyššou ako je účinnosť luminiscencie komerčných fosforov porovnateľného zloženia.
Výstupy projektu:
1/ K. HALADEJOVÁ - A. PRNOVÁ - R. KLEMENT - W.-H. TUAN - S.-J. SHIH - D. GALUSEK, Aluminate glass based phosphors for LED applications, J. Eur. Ceram. Soc., 2015, prijaté do tlače
2/ BODIŠOVÁ, Katarína - KLEMENT, Róbert - GALUSEK, Dušan - POUCHLÝ, Václav - D. DRDLÍK - MACA, Karel, Luminescent rare-earth-doped transparent alumina ceramics, J. Eur. Ceram. Soc., 2015, prijaté do tlače
3/ S.J. SHIH - S.H. LIN - P. VETEŠKA - D. GALUSEK - W.H. TUAN, Preparation and characterization of Eu-doped gehlenite glassy particles using spray pyrolysis, Advanced Powder Technology (submitted)
4/ S.J. SHIH - S.H. LIN - P. VETEŠKA - D. GALUSEK - W.H. TUAN, Correlation between dopant distribution and photoluminescence for Eu-doped gehlenite glassy partilces Advanced Powder Technology (submitted)
5/ A. PRNOVÁ - R. KLEMENT - K. BODIŠOVÁ, Ľ. HRIC - E. NEUBAUR - D. GALUSEK - E. BRUNEEL - I. Van DRIESSCHE, Study of thermal behaviour and hot pressing of aluminate glass microspheres, pp. 37-39 in: Proceedings of the the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015
6/ P. ŠVANČÁREK - R. KLEMENT - L. DVORSKÁ - D. GALUSEK, Willemite based fluorescent materials, pp. 125-127 in: Proceedings of the the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015
7/ R. KLEMENT - P. ŠVANČÁREK - D. GALUSEK, The effect of Mn2+ concentration and ZnO/SiO2 ratio on luminescence intenzity and luminescence decay in green emitting phosphor Zn2SiO4:Mn2+, pp. 134-136 in: Proceedings of the the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015
8/ A. PRNOVÁ - K. HALADEJOVÁ - R. KLEMENT - K. BODIŠOVÁ - A. ČERNÁ - D. GALUSEK, Study of thermal behaviour of Y2O3-Al2O3 glass microspheres, p. 104 in: Book of Abstracts, 3rd Central and Eastern European Conference on Thermal Analysis and Calorimetry, August 25-28, Ljubljana, Slovenia
9/ M.-C. WU - W.H. Tuan, Luminescence properties of Zn2SiO4:Mn,Ce phosphor prepared by spray pyrolysis, ACTSEA 2015, 2015/11/8-11, Tainan, Taiwan.
10/ R. KLEMENT - A. PRNOVÁ - S.-J. SHIH - W.-H. TUAN - D. GALUSEK, Aluminate and aluminosilicate glass phosphors with rare earth and transient element activators, ACTSEA 2015, 2015/11/8-11, Tainan, Taiwan

3.) Vývoj kompozitných keramických materiálov pre bioaplikácie *(Development of ceramics composites materials for bio-applications.)*

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.9.2013 / 31.12.2016
Evidenčné číslo projektu:	SAS - TUBITAK JRP 2013/02
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Turecko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 25000 €

Dosiahnuté výsledky:
V rámci riešenia projektu sa podarilo pripraviť kompozitný materiál na báze nitridu kremičitého s bioaktívnou zložkou vo forme hydroxyapatitu. Pripravená keramická matrica bola ocharakterizovaná z hľadiska mikroštruktúry, mechanických vlastností a pórovitosti, pričom tieto vlastnosti v plnej miere spadali do oblasti hodnôt nameraných pre trabekulárnu kosť, čo je hlavnou požiadavkou pri vývoji kostných náhrad. Na pripravenom kompozite bolo taktiež vykonané biologické testovanie, v rámci ktorého bola stanovená biokompatibilita a bioaktivita materiálu. Výsledkom tohto testovania je, že pripravený SN/HA kompozit je biokompatibilný, pričom vykazuje zvýšenú bioaktivitu v porovnaní s referenčnou Si3N4 matricou. Momentálne sa zaoberáme zvyšovaním adhézie vytvorenej HA vrstvy k substrátu na báze Si3N4.

Publikácie:
1/ M. PRECNEROVÁ - K. BODIŠOVÁ - F. FRAJKOROVÁ - D. GALUSKOVÁ - Z. VARCHULOVÁ NOVÁKOVÁ - J. VOJTAŠŠÁK - Z. LENČÉŠ - P. ŠAJGALÍK. In vitro bioactivity of silicon nitride-hydroxyapatite composites. In Ceramics International, 2015, vol. 41, no. 6, p. 8100-8108. (2.605 - IF2014).
2/ Z. PRAMUKOVÁ - M. KAŠIAROVÁ - M. DOMANICKÁ - M. HNATKO - P. ŠAJGALÍK. Local mechanical properties of highly porous Si3N4 for trabecular bone replacement. In Key Engineering Materials, 2015, vol. 662, p. 142-146. (0.194 - IF2014).

3/ Z. PRAMUKOVÁ - M. KAŠIAROVÁ - M. DOMANICKÁ - M. HNATKO - P. ŠAJGALÍK. Mechanical and microstructural characterization of porous silicon nitride biomaterials. In Preparation of ceramic materials : Proceedings of the 11th international conference. Herľany, 9.-11.6.2015. Ed. František Lofaj, Miroslav Hnatko a kol., Košice, Technical University, 2015, p. 59-63.

Programy: COST

4.) Naša história z astrochémie *(Our Astro-Chemical History)*

Zodpovedný riešiteľ:	Jozef Noga
Trvanie projektu:	26.11.2014 / 25.11.2018
Evidenčné číslo projektu:	CMST COST Action CM1401
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Institut de Planétologie at dAstrophisique de Grenoble
Počet spoluriešiteľských inštitúcií:	9 - Rakúsko: 1, Česko: 1, Nemecko: 1, Dánsko: 1, Fínsko: 1, Maďarsko: 1, Írsko: 1, Taliansko: 1, Holandsko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4600 €

Dosiahnuté výsledky:
Pre systémy C---H2 a O---H2 sa vypočítali 3-dimenzionálne potenciálové hyperplochy v oblasti nekovalentných interakcií, pre rôzne symetrie. Pri výpočtoch sa použila explicitne korelovaná teória spriahnutých klastrov a dosiahla sa bezprecedentná presnosť. V súčasnosti sa dáta spracúvajú tak, aby mohol byť vygenerovaný analytický tvar a aby tak boli napočítané hyperplochy ľahko využiteľné pri modelovaní medzimolekulových kolíznych procesov v medzihviezdnom priestore.

5.) Nová generácia biomimetických implantátov pre náhradu kostí *(New generation biomimetic and customized implants for bone engineering)*

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.2.2014 / 31.10.2017
Evidenčné číslo projektu:	MPNS COST Action MP1301
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Belgium Ceramic Research Centre Mons
Počet spoluriešiteľských inštitúcií:	56 - Rakúsko: 0, Belgicko: 1, Kanada: 1, Nemecko: 3, Dánsko: 2, Španielsko: 5, Fínsko: 1, Francúzsko: 14, Veľká Británia: 6, Švajčiarsko: 1, Írsko: 2, Island: 1, Taliansko: 6, Litva: 1, Lotyšsko: 1, Holandsko: 2, Nórsko: 0, Portugalsko: 5, Slovinsko: 1, Švédsko: 2, USA: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 4000 €

Dosiahnuté výsledky:
V rámci projektu sa zaoberáme konštrukčným materiálom na báze Si3N4 (SN) s cieľom zvýšiť jeho bioaktivitu. Nitrid kremičitý je pre svoje vlastnosti vhodný pre mnohé aplikácie a okrem iného aj ako biokeramický materiál. SN je netoxický a biokompatibilný čo bolo potvrdené jak in vivo tak in vitro testami. Využíva sa ako hutný aj ako pórovitý biokeramický materiál a v porovnaní s Al2O3 sa vyznačuje vyššou osteointegráciou (vrastanie kostných buniek). Nevýhodou SN je, že je bioinertný. Preto je našou snahou pripraviť kompozitný materiál, v ktorom mechanické vlastnosti bude zabezpečovať SN a vysokú bioaktivitu vrstva HA na jeho povrchu. Zvyšovanie chemickej adhézie hydroxyapatitu (HA) k SN je problém, pretože SN je stabilný a reaguje až pri vysokých teplotách. Avšak SN je v drvivej miere spekaný v kvapalnej fáze, ktorej zloženie môže byť rôzne, v závislosti od konečnej aplikácie (napr. biologicky prijateľná fáza s obsahom prvkov Ca, Mg, P). Táto fáza na hraniciach SN zŕn by mohla za určitých špecifických podmienok zvýšiť chemickú adhéziu k substrátu na báze SN. Najčastejšou prísadou (resp. nečistotou) v SN je SiO2 a preto sme sa v tomto štádiu riešenia projektu zamerali práve na tento systém. Ak plazmou leptaný povrch SN s prídavkom SiO2 v množstve 10 hm% oxidujeme pri teplote 1200°C, získame súvislú vrstvu SiO2 na povrchu SN. Po nanesení vrstvy sólu HA vzniká reakčný systém SiO2 + Ca10(PO4)6(OH)2. Z modelových experimentov a termodynamickej analýzy vyplýva, že chemické prepojenie týchto dvoch fáz znemožňuje teplota rozkladu HA, ktorá

je 1200°C pre stechiometrický HA a zároveň termodynamická stabilita oboch fáz do teploty 1200°C. Z výsledkov modelových experimentov nepriamo vyplýva, že ak chceme získať chemickú väzbu medzi SiO2 a HA bez toho, aby sa nám HA rozložil, musíme použiť medzivrstvu. V prípade, že by sa nám podarilo medzi HA a SiO2 vytvoriť medzivrstvu bohatú na CaO, tak pri teplote nad 900°C (kalcinácia HA), by mala vznikať na rozhraní fáza CaO.SiO2 (CS) a zároveň by mohlo dochádzať k zabudovaniu CaO do štruktúry HA (pod teplotou rozkladu HA). Týmto spôsobom by došlo k previazaniu oboch vrstiev chemickými väzbami, čo by mohlo mať priamy vplyv na konečnú adhéziu HA k SN. Ak by sme sa posunuli s koncentráciou CaO dostatočne vysoko, vznikal by pri určitých podmienkach aj 2CaO.SiO2 (C2S). Obe tieto fázy jak CS tak aj C2S sú vysoko bioaktívne, čo by v súvislosti s prípravou kompozitu mohla byť veľká výhoda. Výhoda by spočívala v tom, že aj pri resorbcii povrchovej vrstvy HA v ľudskom tele (resp. pri jej poškodení) by sa obnažil vysoko bioaktívny povrch na báze CS/C2S a nie SiO2 prípadne SN.

Publikácie: (publikácia je v štádiu prípravy)

Programy: 7RP

6.) Pokrok vo vývoji a aplikáciách balíka NMR spektroskopie pre paramagnetické systémy. Kombinovaný experimentálno-teoretický prístup (pNMR) *(Pushing the envelope of nuclear magnetic resonance spectroscopy for paramagnetic systems. A combined experimental and theoretical approach (pNMR))*

Zodpovedný riešiteľ:	Vladimír Malkin
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	PITN-GA-2012-317127
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Centre Europeen de RMN a Tres Hauts Champs
Počet spoluriešiteľských inštitúcií:	10 - Nemecko: 2, Fínsko: 1, Francúzsko: 1, Veľká Británia: 1, Švajčiarsko: 1, Taliansko: 2, Holandsko: 1, Švédsko: 1
Čerpané financie:	EU: 60022 € Podpora medzinárodnej spolupráce z národných zdrojov: 6393 €

Dosiahnuté výsledky:
ASHER, James Richard - MALKIN, Vladimír - MALKINA, Oľga. Visualization of the four-component g-tensor density as a three-dimensional function. In Chemical Physics Letters, 2015, vol. 636, p. 46-50. (1.897 - IF2014).

7.) Nitridové materiály s funkčnými vlastnosťami pre aplikácie v energetike *(Functional nitrides for energy applications)*

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.1.2011 / 31.1.2015
Evidenčné číslo projektu:	264873
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Technische Universtät Darmstadt
Počet spoluriešiteľských inštitúcií:	9 - Nemecko: 3, Francúzsko: 2, Taliansko: 2, Švédsko: 1, Turecko: 1
Čerpané financie:	EU: 33704 € Podpora medzinárodnej spolupráce z národných zdrojov: 999 €

Dosiahnuté výsledky:
Projekt bol zameraný prípravou fotoluminiscenčných materiálov na báze ternárnych nitridov MgSiN2 a LaSi3N5. Ternárne nitridy boli pripravené nitridáciou východiskovej zmesi práškov Si, Mg2Si alebo LaSi a Si3N4. Ako dopanty boli použité oxidy kovov vzácnych zemín: Eu2O3, Sm2O3 a CeO2. Optimalizáciou teplotného a plynového režimu syntézy luminoforov ako aj reguláciou obsahu dopantov (Eu, Sm, Ce) sa podarilo pripraviť keramické luminiscenčné materiály. Merania fotoluminescenčných spektier ukázali že:
• MgSiN2:Eu luminofor emituje žiarenie v červenej oblasti
• MgSiN2:Ce luminofor emituje žiarenie v zelenej oblasti

• LaSi3N5:Eu luminofor emituje žiarenie v zelenej oblasti
• LaSi3N5:Sm luminofor emituje žiarenie v oranžovej oblasti
• LaSi3N5:Ce luminofor emituje žiarenie vo fialovo-modrej oblasti
Optimálne množstvo dopantu bolo v rozmedzí 3 – 6 mol%.

Použitím výpočtového kódu VASP a hybridného funkcionálu HSE06 bola vypočítaná elektrónová štruktúra a šírky zakázaného pásma LaSi3N5 dopovaného lantanoidmi.

Publikácie:
1/ IBRAHIM, Ismail - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol - BENCO, Ľubomír. Electronic structure and energy level schemes of RE3+:LaSi3N5 and RE2+:LaSi3N5-xOx phosphors (RE=Ce, Pr, ND, Pm, Sm, Eu) from first principles. In Journal of Luminescence, 2015, vol. 164, p. 131-137. (2.719 - IF2014).
2/ IBRAHIM, Ismail - LENČÉŠ, Zoltán - BENCO, Ľubomír - ŠAJGALÍK, Pavol. Ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors: A role of oxygen atom. In Journal of the European Ceramic Society, 2015, vol. 35, no. 12, p. 3249-3253. (2.947 - IF2014).
3/ IBRAHIM, Ismail - LENČÉŠ, Zoltán - BENCO, Ľubomír - ŠAJGALÍK, Pavol. Lanthanide-doped LaSi3N5 based phosphors: Ab initio study of electronic structures, band gaps and energy level locations. Journal of Luminescence, 172 (2016) 83-91.
4/ IBRAHIM, Ismail - LENČÉŠ, Zoltán - BENCO, Ľubomír - ŠAJGALÍK, Pavol Influence of Lanthanoid Dopant and N/O Substitution on the Electronic Structure and Luminescent Properties of Lanthanum Silicon Oxynitride Phosphors, in Proceedings of the 39th ICACC, January 25-30, 2015, Daytona Beach, Florida, USA, manuscript ID 2059687, pp. 1-9.
5/ IBRAHIM, Ismail - LENČÉŠ, Zoltán - BENCO, Ľubomír - ŠAJGALÍK, Pavol Luminescent properties and ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors. Book of abstracts of the Engineering Ceramics 2015 – Materials for better life, Smolenice castle, May 10-14, 2015, p. 79 (ISBN 978-80-971648-3-6).

Programy: Bilaterálne - iné

8.) Potenciálny vplyv draslíka a rubídia na prípravu oxyfluorohlinitanových komplexov v tuhom stave *(Potential influence of potassium and rubidium on the formation of oxofluoroaluminates in solid state)*

Zodpovedný riešiteľ:	František Šimko
Trvanie projektu:	1.1.2014 / 31.12.2015
Evidenčné číslo projektu:	K-FR-2013-NEWPROJECT-3026
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Francúzsko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 1349 €

Dosiahnuté výsledky:
Uskutočnila sa dôsledná fázová analýza systémov $KF–Al_2O_3$ a $RbF–Al_2O_3$, kombináciou rozdielnych termochemických a analytických techník, ako sú termická analýza, NMR spektroskopia a rtg difrakčná analýza. V prvom kroku sa zadefinovali sa fázové polia v meraných častiach fázových diagramov pomocou termickej analýzy a následne sa identifikovali primárne tuhé fázy, existujúce skúmaných systémoch. Z výsledkov vyplýva, že oba merané systémy nie sú pravé jednoduché binárne systémy, ale pseudobinárne. V skutočnosti patria do ternárneho recipročného systému $MF−AlF_3−Al_2O_3−M_2O$, kde M_3AlF_6 je zložka z binárneho systému $MF−AlF_3$ a $MAlO_2$ patrí do binárneho systému $Al_2O_3−M_2O$ (M = K, Rb). Predstavujú teda komplikované viacfázové systémy. Prítomné fázy boli identifikované v meraných systémoch a následne pripravené ako čisté látky. Pripravili sa fluoro-, oxo- a oxofluoro-hlinitanové komplexné zlúčeniny α-K_3AlF_6, $KAlF_4$, $KAlO_2$, KAl_9O_{14}, $KAl_{11}O_{17}$, $K_2Al_2O_3F_2$, ako aj α-Rb_3AlF_6, $RbAlF_4$, $RbAlO_2$, $RbAl_{11}O_{17}$, $Rb_2Al_2O_3F_2$, ktorých chemická podstata bola charakterizovaná pomocou MAS, MQ-MAS, D-HMQC a REDOR NMR techník. Pri niektorých komplexoch išlo vôbec ich prvú prípravu a charakterizáciu. Kombináciou získaných výsledkov sa určili ako štruktúrne parametre daných komplexných zlúčenín. Načrtli sa aj pochody, prebiehajúce pri rozpúšťaní Al_2O_3 v jednotlivých meraných systémoch.

Programy: ERANET

9.) Kompozity keramika-grafénové platničky pre využitie v tribologických systémoch pracujúcich vo vodnom prostredí

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.9.2014 / 31.8.2017
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 6500 €

Dosiahnuté výsledky:

V tejto fáze projektu sme sa zamerali na prípravu keramických materiálov na báze Si3N4 a SiC s prídavkom grafénu vo forme grafénových nanoplatničiek a oxidu grafénu. V prípade kompozitov na báze SiC boli pripravené kompozitné prášky s obsahom 1, 3, 5 hm. % grafénových nanoplatničiek a oxidu grafénu pomocou planétového mletia a vymrazovania. Tieto kompozitné prášky s rôznym obsahom grafénu boli spekané metódou Rapid hot press pri teplote 1800°C a tlaku 50 MPa vo vákuu. Týmto spôsobom sa podarilo pripraviť takmer hutné kompozity (relatívna hustota > 98 %) aj pri vyšších prídavkoch grafénu.
V ďalšej fáze bude nasledovať charakterizácia pripravených kompozitov a meranie tribologických vlastností.

Publikácie:
1/ HANZEL, Ondrej - SEDLÁČEK, Jaroslav - HADZIMOVÁ, Eva - ŠAJGALÍK, Pavol. Thermal properties of alumina-MWCNTs composites. In Journal of the European Ceramic Society, 2015, vol. 35, no. 5, p. 1559-1567. (2.947 - IF2014). ISSN 0955-2219.
2/ KAŠIAROVÁ, Monika - MICHÁLKOVÁ, Monika - DUSZA, Ján - ŠAJGALÍK, Pavol. Scratch resistance of Si3N4-graphene nanoplatelets composites. In Key Engineering Materials, 2015, vol. 662, p. 165-168. (0.194 - IF2014). ISSN 1013-9826.

Projekty národných agentúr

Programy: VEGA

1.) Roztavené fluoridové systémy pre vysokoteplotné aplikácie s potenciálom využitia v energetickom sektore *(Molten fluoride systems for high temperature applications with potential in energy sector application)*

Zodpovedný riešiteľ:	Miroslav Boča
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0095/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 23977 €

Dosiahnuté výsledky:

V rámci riešenia projektu boli študované vybrané fluoridové taveninové systémy dôležité pre vysokoteplotné aplikácie.
- Bol študovaný vplyv prídavku rôznych fluoridov do eutektickej zmesi LiF-NaF-KF na koróznu odolnosť zliatiny Incoloy v statickom prostredí. Na základe váhových úbytkov možno konštatovať, že dochádza ku koróznemu napadnutiu už po minimálnom prídavku fluridov vybraných kovov. Pri rovnakom obsahu pridaného fluridu boli pozorované zvyšujúce váhové úbytky zliatiny v rade $Cr(3+) < Fe(2+) < Fe(3+) < Ni(2+)$, čo zodpovedá radu štandardného elektródového potenciálu kovov.

- V rámci statických koróznych testov boli skúmané interakcie kovového zirkónia a jeho vybraných zliatin so zmesou $(LiF\text{-}NaF\text{-}KF)_{eut.}$ obohatenou o fluoridové zlúčeniny zirkónia. Korózna odolnosť čistého zirkónia prudko klesá pri obsahu 5 mól.% K_2ZrF_6. V prípade zirkóniových zlatin, ktoré sú obohatené o cín a niób bola pozorovaná korózna odolnosť až do obsahu 60 mól%.
- V rámci štruktúrnej analýzy izoštruktúrnych fluoridových zlúčenín boli skúmané tantalové a nióbové zlúčeniny metódou XPS a NMR v tuhej faze. Na základe získaných experimentálnych údajov bol ukázaný rozdiel v elektrónovej štruktúre izoštruktúrnych zlúčenín, ktoré potom následne majú vplyv na spektrálne a termo-chemické správanie študovaných párov $KTaF_6$ vs. $KNbF_6$,
K_2TaF_7 vs. K_2NbF_7 and K_3TaF_8 vs. K_3NbF_8.
- Fyzikálno-chemické vlastnosti (hustota, viskozita a elektrická vodivosť) boli merané pre kryolitové elektrolyty s prídavkom SiO_2. V študovanom koncentračnom intervale boli pozorované lineárne teplotné závislosti skúmaných vlastností.
- Objemové vlastnosti troch rôznych fluoridových sústav boli počítané niekoľkými spôsobmi a výsledky ukázali minimálne rozdiely v získaných údajov, ktoré boli zapríčinené voľbou matematickej funkcie popisujúcej koncentračnú závislosť mólového objemu.

Publikácie a konferenčné príspevky:
1/ V. PAVLÍK - M. KONTRÍK - M. BOČA, Corrosion behaviour of Incoloy 800H/HT in fluoride molten salt FLINAK(eut)-MFx (MFx = CrF3, FeF2, FeF3 and NiF2). In New Journal of Chemistry, 2015, vol. 39, p. 9841-9847. (3.086 - IF2014).
2/ V. PAVLÍK - M. KONTRÍK - M. BOČA, Nový obzor pri testovaní korózií vo fluoridovom prostredí "FLINAK". In Interakce tavenin s progresivními anorganickými materiály, Hotel Ráztoka, Trojanovice, Česká republika, 13.-14. října 2015: sborník 6. odborného semináře, Česká republika, VŠB-TU Ostrava, 2015,
3/ V. PAVLÍK - P. BARBORÍK - M. BOČA - Z. VASKOVÁ, Interaction of metallic zirconium and its alloys Zry-2 and E110 with molten eutectic salt of LiF-NaF-KF containing zirconium fluoride components Chemical Papers. Akceptované. DOI: 10.1515/chempap-2015-0202.
4/ M. BOČA - A. RAKHMATULLIN - J. MLYNÁRIKOVÁ - E. HADZIMOVÁ - Z. VASKOVÁ - M. MIČUŠÍK, Differences in XPS and solid state NMR spectral data and thrmo-chemical properties of iso-structural compounds in the series KTaF6, K2TaF7 and K3TaF8 and KNbF6, K2NbF7 and K3NbF8. In Dalton Transactions, 2015, vol. 44, p. 17106-17117. (4.197 - IF2014).
5/ M. KORENKO - Z. VASKOVÁ - J. PRIŠČÁK - F. ŠIMKO - M. AMBROVÁ - Z. SHI, Density, viscosity and electrical conductivity of the molten cryolite electrolytes (Na3AlF6-SiO2) for solar grade silicon (Si-SoG) electrowinning. In NEW SZP IF 2012: SILICON-NETH, 2015, vol. 7, p. 261-267. (1.069 - IF2014).
6/ M. KORENKO - Z. VASKOVÁ - F. ŠIMKO - M. ŠIMURDA - M. AMBROVÁ - Z. SHI, Electrical conductivity and viscosity of cryolite electrolytes for solar grade silicon (Si-SoG) electrowinning. In Transactions of Nonferrous Metals Society of China, 2014, vol. 24, p. 3944-3948. (1.001 - IF2013). (2014 - Current Contents).
7/ J. MLYNÁRIKOVÁ - B. KUBÍKOVÁ - M. BOČA - E. HADZIMOVÁ - M. ŠIMURDA. Parciálny molárny objem a dodatkový parciálny molárny objem fluoridových tavenín. In Interakce tavenin s progresivními anorganickými materiály, Hotel Ráztoka, Trojanovice, Česká republika, 13.-14. října 2015 : sborník 6. odborného semináře. - Česká republika, VŠB-TU Ostrava, 2015, p.

2.) Hybridné materiály vrstevnatých kremičitanov s kyanínovými a porfyrínovými farbivami *(Hybrid materials based on layered silicates with cyanine and porphyrine dyes)*

Zodpovedný riešiteľ:	Adriana Czímerová
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	2/0107/13
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 13945 €

Dosiahnuté výsledky:
V sledovanom období sme pokračovali na príprave hybridných materiálov na báze ílových minerálov a organické farbivo (porfyrínové a kyanínové) s vylepšenými fluorescenčnými vlastnosťami. Cenné výsledky boli získané v prípade tetrakatiónového porfyrínového farbiva nasorbovaného na sériu vzoriek montmorillonitu s redukovaným nábojom na vrstvách. Primárne sa študoval vplyv záporného náboja na vrstvách montmorillonitu na fluorescenčné vlastnosti

pripravených hybridných systémov. Dôležitým výsledkom sú vypočítané kvantové výťažky fluorescencie pripravených systémov, ktoré veľmi dobre korelujú s nameranými spektrami. Ďalším dôležitým výsledkom projektu sú štúdie prenosu energie v systéme organicky modifikovaný saponit/kyanínové farbivá. Boli pripravené organicky modifikované vzorky saponitu, kde sa ako organické surfaktanty boli použité alkylamónne katióny s rôznym počtom atómov uhlíka v reťazci. Boli študované fluorescenčné spektrá takto modifikovaných organo-saponitov a vplyv surfaktantu na prenos energie v takýchto hybridných systémoch pomocou absorpčnej a fluorescenčnej spektroskopie.
Účasť na konferenciách a príspevky:
1/ A. ČEKLOVSKÝ - A. CZÍMEROVÁ. Fluorescence study on the spectral behaviour of TMPyP in aqueous dispersions of reduced-charge montmorillonites. In ICP 2015. 27th international conference on photochemistry, June 28-July 3, 2015, ICC Jeju, Jeju Island, Korea, 2015, p. 169.
2/ A. CZÍMEROVÁ - A. ČEKLOVSKÝ. Energy transfer in hybrid systems layered silicate/laser dyes. In ICP 2015. 27th international conference on photochemistry, June 28-July 3, 2015, Jeju Island, Korea, 2015, p. 596.
3/ P. BOHÁČ - A. CZÍMEROVÁ - J. BUJDÁK. Improvement the efficiency of FRET in the hydrid - smectite / cyanine dyes systems using premodification of smectite surface. In ICP 2015. 27th international conference on photochemistry, June 28-July 3, 2015, Jeju Island, Korea, 2015, s. 486.

3.) Keramické vrstvy pripravené z organokremičitých prekurzorov pre vysokoteplotnú protikoróznu ochranu kovov *(Ceramic coatings with glass fillers for high temperature corrosion protection of metals)*

Zodpovedný riešiteľ:	Dušan Galusek
Trvanie projektu:	1.1.2014 / 31.12.2016
Evidenčné číslo projektu:	2/0058/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	SAV: 3802 €

Dosiahnuté výsledky:
V rámci projektu sa vyselektovali vhodné typy organokremičitých prekurzorov slúžiace na prípravu keramických povlakov na kovových substrátoch, ako aj ytrito-hlinito-kremičitanové sklá slúžiace ako pasívne plnivá pre zníženie zmraštenia polymérov počas ich konverzie na keramiku. Plameňovou syntézou sa pripravili 4 rôzne zloženia týchto skiel vo forme sklených mikroguličiek, ktoré sa použili ako plnivo do polymérnej matrice. Celkovo sa pripravilo 25 rôznych typov povlakov na kovových substrátoch, pričom sa optimalizovali podmienky prípravy a zloženie povlakov (teplota a čas pyrolýzy, objemová frakcia skleného plniva). Vrstvy sa charakterizovali z hľadiska ich mikroštruktútry a fázového zloženia, ako aj adhézie na kovových substrátoch a otestovala sa ich korózna odolnosť v podmienkach hydrotermálnej korózie, ako aj korózna odolnosť samotného kovového a povlakovaného substrátu pri teplotách do 1100 °C v oxidačnej atmosfére s definovanými parciálnymi tlakmi vodnej pary.
1/ I. PETRÍKOVÁ - M. PARCHOVIANSKÝ - G. BARROSO - G. MOTZ - D. GALUSKOVÁ - D. GALUSEK, Polymer derived glass ceramic layers for corrosion protection of metals, in: Proceedings of the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015, pp. 13-17.
2/ M. PARCHOVIANSKÝ - I. PETRÍKOVÁ - D. GALUSKOVÁ - G. MOTZ - D. GALUSEK. Polysilazane-derived (oxy)nitride coatings with glass microsphere passive fillers for high temperature corrosion protection of metals, CMCEE-T2-S6-006-2015, p. 48 in: Abstracts, 11th International Conference on Ceramic Materials and Components for Energy and Environemental Applications, June 14-19, 2015, Vancouver, Canada, on CD-ROM

4.) Zlepšenie funkčných vlastností keramických materiálov prídavkom uhlíkových nanorúrok a grafénu *(Improvement of functional properties of ceramic materials with the addition of carbon nano-tubes and graphene)*

Zodpovedný riešiteľ:	Miroslav Hnatko
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	2/0065/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV

Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 10386 €

Dosiahnuté výsledky:
Cieľom druhej časti projektu bola príprava vzoriek hutných keramických SiC/CNT kompozitov. Všetky hutné materiály boli úspešne pripravené metódou žiarového lisovania v grafitovej forme pri teplote 1850°C (1900°C), pri mechanickom zaťažení 40MPa (30MPa) a pri miernom pretlaku Ar atmosféry (0,15 MPa) po dobu jednej hodiny. Kvôli zníženiu vplyvu uhlíka na reakčnú zmes počas žiarového lisovania boli vzorky oddelené od grafitovej formy tenkou vrstvou hexagonálneho BN. Hustota vzoriek sa merala Archimedovou metódou vážením v Hg. Teoretické hustoty vzoriek sa vypočítali z objemového podielu jednotlivých fáz. Pre porovnanie bol paralelne s kompozitnými materiálmi pripravený aj SiC bez prídavku CNT (SiCref).
Do budúcna bude potrebné na pripravených kompozitoch:
- potvrdiť prítomnosť CNT ako aj sledovať homogenitu ich distribúcie v ich objeme po spekaní (DTA/TG, SEM, TEM)
- zhodnotiť vplyv kvality práškového kompozitného SiC/CNT prekurzoru (prítomnosť nežiadúcich produktov procesu prípravy CNT - amorfný uhlík) na mikroštruktúru, výsledné mechanické vlastnosti a elektrickú/tepelnú vodivosť keramického SiC/CNT kompozitu
- kriticky zhodnotiť daný proces prípravy kompozitného SiC/CNT materiálu

Publikácie:
1/ HANZEL, Ondrej - SEDLÁČEK, Jaroslav - HADZIMOVÁ, Eva - ŠAJGALÍK, Pavol. Thermal properties of alumina-MWCNTs composites. In Journal of the European Ceramic Society, 2015, vol. 35, no. 5, p. 1559-1567. (2.947 - IF2014). ISSN 0955-2219.
2/ KAŠIAROVÁ, Monika - MICHÁLKOVÁ, Monika - DUSZA, Ján - ŠAJGALÍK, Pavol. Scratch resistance of Si3N4-graphene nanoplatelets composites. In Key Engineering Materials, 2015, vol. 662, p. 165-168. (0.194 - IF2014). ISSN 1013-9826.
3/ BYSTRICKÝ, Roman - HNATKO, Miroslav - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol. Densification process in Si3N4-Y2O3-SiO2-C system in GPS. In Advanced research workshop Engineering Ceramics 2015, materials for better life, Smolenice castle, may 10-14, 2015 : book of abstracts. - Bratislava, Slovakia : Institute of Inorganic Chemistry SAS, 2015, p. 69. ISBN 978-80-971648-3-6.
4/ FIDES, Martin - KOVALČÍKOVÁ, Alexandra - HVIZDOŠ, Pavol - HNATKO, Miroslav. Local mechanical properties of SiC-TiNbC composite and its constituents. In Local mechanical properties 2015 : Proceedings of 12th international conference. Liberec, 4.-6.11.2015. - B.V., 2015, p. 12.

5.) Štruktúra a vlastnosti oxidových skiel – molekulová dynamika, termodynamické modely, kryštalizácia, vibračné a impedančné spektrá *(Structure and properties of oxide glasses – molecular dynamics, thermodynamic models, crystallization, vibrational and impedance spectroscopy)*

Zodpovedný riešiteľ:	Mária Chromčíková
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	1/0006/12
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Trenčianska univerzita Alexandra Dubčeka
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 617 €

Dosiahnuté výsledky:
Zásadný výsledok sa dosiahol v oblasti parametrizácie termodynamických modelov sklotvorných sústav pre ktoré absentujú dostupné termodynamické dáta (fázové diagramy a štandardné tvorné Gibbsove energie zložiek). Vypracovala, overila a opublikovala sa metóda parametrizácie založená na reprodukcii štruktúrnych dát získaných spektroskopickými metódami.

6.) Nové anorganické fosfory na báze hlinitanov vzácnych zemín pre aplikácie v LED diódach vyžarujúcich biele svetlo *(New rare-earth aluminate-based inorganic phosphors for applications in white light emitting LEDs)*

Zodpovedný riešiteľ:	Róbert Klement
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	1/0631/14
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 2249 €

Dosiahnuté výsledky:

V rámci projektu sa detailne skúmal vplyv chemického a fázového zloženia na luminiscenčné vlastnosti anorganických fosforov na báze hlinitanov vzácnych zemín, vrátane fosforov kodopovaných viacerými oxidmi kovov vzácnych zemín súčasti s cieľom dosiahnuť up-konverziu žiarenia a emisiu viditeľného žiarenia pri excitácii infračerveným zdrojom.

1/ K. HALADEJOVÁ - A. PRNOVÁ - R. KLEMENT - W.-H. TUAN - S.-J. SHIH - D. GALUSEK, Aluminate glass based phosphors for LED applications, J. Eur. Ceram. Soc., 2015, zaslané do tlače

2/ K. HALADEJOVÁ - R. KLEMENT - L. DVORSKÁ - A. PRNOVÁ - D. GALUSEK, The effect of thermal treatment on luminiscence properties of Ce3+ doped glass and glass-ceramics in the system Y2O3?Al2O3, pp. 23-27 in: Proceedings oft he the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015

3/ L. DVORSKÁ - K. HALADEJOVÁ - R. KLEMENT - A. PRNOVÁ - D. GALUSEK, Emission properties of Eu3+/Eu2+ phosphors in the system Y2O3?Al2O3, pp. 137 in: Proceedings oft he the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015

4/ K. HALADEJOVÁ - R. KLEMENT - A. PRNOVÁ - D. GALUSEK, Crystallization of Ce3+ doped glass in the system Y2O3-Al2O3 and the effect of thermal tratment on the luminescence properties, p. 319 in: Book of Abstracts, 3rd Central and Eastern European Conference on Thermal Analysis and Calorimetry, August 25-28, Ljubljana, Slovenia.

7.) Svetlo emitujúce luminofóry na báze ternárnych nitridov a oxynitridov kremíka *(Ternary silicon nitride and oxynitride-based phosphors)*

Zodpovedný riešiteľ:	Zoltán Lenčéš
Trvanie projektu:	1.1.2014 / 31.12.2017
Evidenčné číslo projektu:	2/0112/14
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 17266 €

Dosiahnuté výsledky:

Projekt je zameraný prípravou troch fotoluminiscenčných systémov na báze nitridov (MgSiN2, LaSi3N5) a oxynitridov (SiAlON)kremíka. Ternárne nitridy boli pripravené nitridáciou východiskovej zmesi práškov Si, Mg2Si alebo LaSi a Si3N4. SiAlONy boli pripravené z polymérneho prekurzoru na báze polysilsequioxánu a alumatránu. Samotná príprava pozostávala zo zosieťovania a pyrolýzy polyméru a následnej karbotermickej redukcie a nitridácie. Ako dopanty boli použité oxidy kovov vzácnych zemín: Eu2O3, Sm2O3 a CeO2. Optimalizáciou teplotného a plynového režimu syntézy luminoforov ako aj reguláciou obsahu dopantov (Eu, Sm, Ce) sa podarilo pripraviť keramické luminiscenčné materiály. Merania fotoluminiscenčných spektier ukázali že:

- MgSiN2:Eu luminofor emituje žiarenie v červenej oblasti
- MgSiN2:Ce luminofor emituje žiarenie v zelenej oblasti
- LaSi3N5:Eu luminofor emituje žiarenie v zelenej oblasti
- LaSi3N5:Sm luminofor emituje žiarenie v oranžovej oblasti
- LaSi3N5:Ce luminofor emituje žiarenie vo fialovo-modrej oblasti
- SiAlON:Eu luminofor emituje v oranžovej oblasti viditeľného svetla
- SiHfON:Eu luminofor emituje v zeleno-žltej oblasti viditeľného svetla
- SiLuON:Eu luminofor emituje v zelenej oblasti viditeľného svetla

Bolo optimalizované aj množstvo dopantu v rozmedzí 1 – 6 mol%.

Metódou MOCVD boli pripravené tenké fotoluminescenčné vrstvy YAG:Ce a YAG:Eu na kremenných sklíčkach. YAG:Ce emituje žiarenie v zelenej oblasti viditeľného svetla.

Použitím výpočtového kódu VASP a hybridného funkcionálu HSE06 bola vypočítaná elektrónová štruktúra a šírky zakázaného pásma LaSi3N5 dopovaného lantanoidmi.

Publikácie:
1/ I. IBRAHIM - Z. LENČÉŠ - P. ŠAJGALÍK - Ľ. BENCO, Electronic structure and energy level schemes of RE3+:LaSi3N5 and RE2+:LaSi3N5-xOx phosphors (RE=Ce, Pr, ND, Pm, Sm, Eu) from first principles. In Journal of Luminescence, 2015, vol. 164, p. 131-137. (2.719 - IF2014)
2/ I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors: A role of oxygen atom. In Journal of the European Ceramic Society, 2015, vol. 35, no. 12, p. 3249-3253. (2.947 - IF2014).
3/ I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Lanthanide-doped LaSi3N5 based phosphors: Ab initio study of electronic structures, band gaps and energy level locations. Journal of Luminescence, 172 (2016) 83-91.
4/ I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Influence of Lanthanoid Dopant and N/O Substitution on the Electronic Structure and Luminescent Properties of Lanthanum Silicon Oxynitride Phosphors, in Proceedings of the 39th ICACC, January 25-30, 2015, Daytona Beach, Florida, USA, manuscript ID 2059687, pp. 1-9.
5/ I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Luminescent properties and ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors. Book of abstracts of the Engineering Ceramics 2015 – Materials for better life, Smolenice castle, May 10-14, 2015, p. 79 (ISBN 978-80-971648-3-6).

8.) Príprava a vlastnosti nových typov organoílov pre polymérne a environmentálne aplikácie

(Preparation and properties of novel organoclays for polymer and environmental applications)

Zodpovedný riešiteľ:	Jana Madejová
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	2/0132/13
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 20191 €

Dosiahnuté výsledky:
Riešenie projektu prebiehalo v súlade so stanoveným harmonogramom. Pokračovalo sa v charakterizácii pripravených organoílov, sledovala sa usporiadanosť surfaktantov v medzivrstvových priestoroch montmorillonitov, ich hydratačná schopnosť, mechanická stabilita ako aj ich priemyselné aplikácie. Dosiahnuté výsledky boli publikované a/alebo zaslané do CC časopisov a prezentované na medzinárodných konferenciách.

Publikácie
1/ Ľ. JANKOVIČ - J. KRONEK - J. MADEJOVÁ - V. HRONSKÝ. (9,10-Dihydroxyoctadecyl) ammonium: A structurally unique class of clay intercalable surfactants. In European Journal of Inorganic Chemistry, 2015, p. 2841-2850. (2.942 - IF2014).
2/ J. MADEJOVÁ - H. PÁLKOVÁ - Ľ. JANKOVIČ. Near-infrared study of the interaction of pyridine with acid-treated montmorillonite. In Vibrational Spectroscopy, 2015, vol. 76, p. 22-30.
3/ H. PÁLKOVÁ - V. HRONSKÝ - V. BIZOVSKÁ - J. MADEJOVÁ. Spectroscopic study of water adsorption on Li+, TMA+ and HDTMA+ exchanged montmorillonite. In Spectrochimica Acta Part A - Molecular and Biomolecular Spectroscopy, 2015, vol. 149, p. 751-761. (2.353 - IF2014)
4/ L. PETRA - P. BILLIK - P. KOMADEL. Preparation and characterization of hybrid materials consisting of high-energy ground montmorillonite and ?-amino acids. In Applied Clay Science, 2015, vol. 115, p. 174-178. (2.467 - IF2014).
5/ M. PENTRÁK - L. PENTRÁKOVÁ - A. RADIAN - Y. MISHAEL - J.W. STUCKI, Nitrate reduction by redox-modified smectites exchanged with chitosan. In Clays and Clay Minerals, 2014, vol. 62, no. 5, p. 403-414. (1.398 - IF2013).
6/ M. GAMBA - F.M. FLORES - J. MADEJOVÁ - R.M. TORRES SÁNCHEZ. Comparison of imazalil removal onto montmorillonite and nanomontmorillonite and adsorption surface sites involved: an approach for agricultural wastewater treatment. In Industrial & Engineering Chemistry Research, 2015, vol. 54, p. 1529-1538. (2.587 - IF2014)
7/ J. MADEJOVÁ - Ľ. SEKERÁKOVÁ – V. BIZOVSKÁ – M. SLANÝ - Ľ. JANKOVIČ. Near-infrared spectroscopy as an effective tool to monitor the conformation of alkylammonium surfactants in montmorillonite interlayers. Zaslané do Vibrational Spectroscopy

8/ E. SCHOLTZOVÁ - J. MADEJOVÁ - Ľ. JANKOVIČ - D. TUNEGA. Structural properties of montmorillonite intercalated with n-butylammonium cations (n=1-4) - computational and experimental study. Zaslané do Clays and Clay Minerals

Konferencie
1/ V. BIZOVSKÁ - Ľ. JANKOVIČ - J. MADEJOVÁ. Hydration properties of a montmorillonite saturated with octylammonium cations: effect of the alkyl-chains number and surfactant concentration. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, abstracts, p. 374.
2/ C. BREEN - F. CLEGG - J. HRACHOVÁ - L. PETRA - P. KOMADEL. Ordered and disordered carbon from pyrolysed clay-organic intercalates. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, 2015
3/ P. KOMADEL - J. MADEJOVÁ - Ľ. JANKOVIČ - V. BIZOVSKÁ - L. PETRA - D. JOCHEC MOŠKOVÁ - I. CHODÁK, Key properties of selected organo-clay-polymer nanocomposites. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, 2015
4/ J. MADEJOVÁ - Ľ. SEKERÁKOVÁ – V. BIZOVSKÁ – M. SLANÝ - Ľ. JANKOVIČ. Near-infrared spectroscopy as a tool to monitor the conformation of surfactants in montmorillonite interlayer. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, p. 22
5/ H. PÁLKOVÁ - M. ZIMOWSKA - Ľ. JANKOVIČ - B. SULIKOWSKI - E.M. SERWICKA - J. MADEJOVÁ. Stability of tetrabutyl-phosphonium and -ammonium modified montmorillonite in inorganic acid. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, p. 335.
6/ E. SCHOLTZOVÁ - J. MADEJOVÁ - D. TUNEGA. Structural properties of montmorillonite intercalated with n-butylammonium cations (n=1-4) - computational and experimental study. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, p. 209.

9.) ReSpect - praktický a účinný výpočtový nástroj pre štúdium zlúčenín ťažkých prvkov *(ReSpect - a practical and efficient computational tool to study heavy element compounds)*

Zodpovedný riešiteľ:	Oľga Malkin
Trvanie projektu:	1.1.2013 / 31.12.2016
Evidenčné číslo projektu:	2/0148/13
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 13882 €

Dosiahnuté výsledky:
KŘÍSTKOVÁ, Anežka - KOMOROVSKÝ, Stanislav - REPISKÝ, Michal - MALKIN, Vladimír - MALKINA, Oľga. Relativistic four-component calculations of indirect nuclear spin-spin couplings with efficient evaluation of the exchange-correlation response kernel. In Journal of Chemical Physics, 2015, vol. 142, p. 114102-1-114102-10. (2.952 - IF2014).
REPISKÝ, Michal - KONEČNÝ, Lukáš - KÁDEK, Marius - KOMOROVSKÝ, Stanislav - MALKINA, Oľga - MALKIN, Vladimír - RUUD, Kenneth. Excitation energies from real-time propagation of the four-component Dirac-Kohn-Sham equation. In Journal of Chemical Theory and Computation, 2015, vol. 11, no. 3, p. 980-991. (5.498 - IF2014).

10.) Štúdium štruktúry a dynamiky vodíkových väzieb v tuhých látkach difrakčnými metódami kvantovej chémie a neelastickým rozptylom neutrónov *(Structure and dynamics of hydrogen bonds in solids by diffraction methods, quantum chemistry and inelastic neutron spectroscopy (INS))*

Zodpovedný riešiteľ:	Ľubomír Smrčok
Trvanie projektu:	1.1.2012 / 31.1.2015
Evidenčné číslo projektu:	2/0131/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských	0

inštitúcií:
Čerpané financie: SAV: 2082 €

Dosiahnuté výsledky:
Kombináciou rtg práškovej difrakcie a DFT výpočtu v tuhej fáze sme vyriešili sme kryštálovú štruktúru ľudského "draselného obličkového kameňa", K(C5H3N4O3)(C5H4N4O3). Spomínaná štruktúra je kokryštálom kyseliny močovej a jej draselnej soli, pričom kyselina a jej anión sú viazané viacerými N-H...O a N-H...N vodíkovými väzbami. Chemicky táto látka zodpovedá návrhu z roku 1862, ale dlho sa predpokladalo, že nemá trojrozmerne usporiadanú štruktúru, alebo že je tzv. amorfná. Dá sa predpokladať, že znalosť štruktúry a povahy väzieb povedie k návrhu cielenejších medikamentov.

1/ D. BAZIN - M. DOUDON - E. ELKAIM - A. LeBAIL - Ľ. SMRČOK, Ab initio structure determination of kidney stone potassium quadriurate from synchrotron powder powder diffraction data, a 150 year problem solved, Comptes Rendus Chimie (2015), http://dx.doi.org/10.1016/ j.crci.2015.02.003

11.) Elektrolyty s nízkou teplotou topenia a zmáčané katódy s potenciálom pre zlepšenie procesu výroby hliníka *(Low melting electrolytes and wetted cathodes with potential for electrolytic aluminium production)*

Zodpovedný riešiteľ: František Šimko
Trvanie projektu: 1.1.2014 / 31.12.2017
Evidenčné číslo projektu: 2/0116/14
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV: 11799 €

Dosiahnuté výsledky:
Uskutočnila sa dôsledná fázová analýza systémov $KF–Al_2O_3$, $3KF/AlF_3$-Al_2O_3 a xKF/AlF_3-Al_2O_3 kombináciou rozdielnych termochemických a analytických techník, ako sú termická analýza, NMR spektroskopia a rtg difrakčná analýza. V prvom kroku sa zadefinovali sa fázové polia v meraných častiach fázových diagramov pomocou termickej analýzy a následne sa identifikovali primárne tuhé fázy, existujúce skúmaných systémoch. V ďalšom kroku sa pripravili a analyzovali čisté komplexné zložky, prítomné vo všetkých analyzovaných systémoch. Pripravili sa fluoro-, oxo- a oxofluoro-hlinitanové komplexné zlúčeniny α-K_3AlF_6, $KAlF_4$, $KAlO_2$, KAl_9O_{14}, $KAl_{11}O_{17}$, , $K_2Al_2O_3F_2$, ktorých chemická podstata bola charakterizovaná pomocou MAS, MQ-MAS, D-HMQC a REDOR NMR techník. Kombináciou získaných výsledkov sa určili ako štruktúrne parametre daných komplexných zlúčenín. Načrtli sa aj pochody, prebiehajúce pri rozpúšťaní Al_2O_3 v jednotlivých meraných systémoch.Vďalšom bode sa realizovali statické korózne marania TiB_2 v tavenine $KF−AlF_3−Al_2O_3$. Určila sa veľmi dobrá korózna odolnosť daného materiálu voči koróznemu médiu. SEM EDX analýza prierezov korodovaných vzoriek ukázala medzikryštálové a transkryštálové korózne napadnutie materiálu. Výsledkom reakcie taveniny s materiálom bolo ochudobňovanie koróznej vrstvy o bór a vznik TiO_2 v lokálnych podmienkach. Bór reagoval s taveninou za vzniku $Al_xB_yO_z$ zlúčenín, čo bolo potvrdené MAS, MQ-MAS, D-HMQC NMR analýzou. Tiež reagoval s fluórom za vzniku plynného BF_3.

12.) Štúdium mechanizmu korózie materiálov používaných pri tavení priemyselne vyrábaných skiel *(Study of the mechanism of corrosion of materials used in a melting of industrially produced glasses)*

Zodpovedný riešiteľ: Peter Šimurka
Trvanie projektu: 1.1.2012 / 31.12.2015
Evidenčné číslo projektu: 2/0165/12
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV: 3455 €

Dosiahnuté výsledky:
Bola spracovaná databáza chemického zloženia šlír vyskytujúcich sa vo výrobkoch Rona a.s pri regulárnej výrobe počas obdobia 4 rokov. Boli stanovené koncentračné profily jednotlivých prvkov prítomných v sklenej fáze žiaromateriálu odobraného z taviaceho agregátu po skončení kampane ako aj na vzorkách podrobených laboratórnemu statickému koróznemu testu. Bol študovaný vzťah medzi zložením šlír a zložením sklenej fázy žiaromateriálu. Získané výsledky boli prezentované na medzinárodných konferenciách.

1/ P. ŠIMURKA - J. KRAXNER - P. VRÁBEL - T. PAUČO. Mechanism of AZS Refractory Corrosion in Barium Soda Lime Potassium Silicate Glass Melt, p. 128 in: Book of Abstracts, ICG Annual Meeting, 20-23 September 2015, Bangkok, Thailand
2/ P. ŠIMURKA - J. KRAXNER - P. VRÁBEL - T. PAUČO. Corrosion of AZS Refractories – Source of Defects in Tableware Glass, p. 19: 76th Conference on Glass Problems, November 2-5, 2015, Columbus, Ohio, USA
3/ P. ŠIMURKA, Corrosion of AZS refractories – source of knots in tableware glass products, Tableware glass melting and forming, Trenčianske Teplice, 2015

Programy: APVV

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

Zodpovedný riešiteľ:	Juraj Bujdák
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0291-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	APVV: 19039 €

Dosiahnuté výsledky:
Podarilo sa pripraviť rôzne typy hybridných materiálov zložených z vrstevnatých kremičitanov a organických farbív. Eliminációu molekulovej agregácie pomocou modifikácie anorganického nosiča sa zvýšila fotofyzikálna aktivita. K úspešným spôsobom modifikácie patrili aktivizácia povrchu pomocou alkylamónnych katiónov alebo polyelektrolytov. Nový typ materiálu sa pripravil z kaolinitu, predexpanziou v organickom rozpúšťadle a modifikáciou reaktívnym typom farbiva. Z funkčných materiálov boli najzaujimavejšie filmy s riadeným niekoľkostupňovým prenosom energie medzi molekulami luminiscenčných farbív. Úspešne sa podarilo pripraviť foto- a bioaktívne materiály z prírodného alkaloidu s luminiscenčnými vlastnosťami. Fotoaktívne a fotosenzibilizačné hybridné systémy sa uplatnili aj pre antimikrobiálne aplikácie. Štúdium interkalácie technologického polyméru polystyrénu v organicky modifikovaných kremičitanoch pomohlo určiť parametre, ktoré zohrávajú kľúčovú úlohu pri tejto reakcii.

Publikácie:
1/ S. BELUŠÁKOVÁ - K. LANG - J. BUJDÁK. Hybrid systems based on layered silicate and organic dyes for cascade energy transfer. In Journal of Physical Chemistry C, 2015, vol. 119, p. 21784-21794..
2/ J. BUJDÁK. Effect of layer charge on the formation of polymer/layered silicate nanocomposites: Intercalation of polystyrene. In Journal of Physical Chemistry C, 2015, vol.119, p. 12016-12022.
3/ A. DONAUEROVÁ - J. BUJDÁK - M. SMOLINSKÁ - H. BUJDÁKOVÁ. Photophysical and antibacterial properties of complex systems based on smectite, a cationic surfactant and methylene blue. In Journal of Photochemistry and Photobiology : B: Biology, 2015, vol. 151, p. 135-141.
4/ M. MATEJDES - A. CZÍMEROVÁ - M. JANEK Fluorescence tuning of 2D montmorillonite optically active layers with beta-cyclodextrine/dye supramolecular complexes. In Applied Clay Science, 2015, vol. 114, p. 9-19.
5/ S. SAS - M. DANKO - K. LANG - J. BUJDÁK. Photoactive hybrid material based on kaolinite intercalated with a reactive fluorescent silane. In Applied Clay Science, 2015, vol. 108, p. 208-2014.

14.) Mechanizmy korózie a mikromechanické vlastnosti dentálnych materiálov *(Mechanisms of corrosion and micromechanical properties of dental materials)*

Zodpovedný riešiteľ:	Dušan Galusek
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0218-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	3 - Slovensko: 3
Čerpané financie:	APVV: 20408 €

Dosiahnuté výsledky:

V rámci projektu sa skúmal vplyv kyslých médií na mikromechanické vlastnosti a odolnosť voči oteru ľudských zubov a sklokeramických dentálnych materiálov na báze leucitu a disilikátu lítneho. U ľudských zubov sa zistil zásadný vplyv expozície voči kyslým médiám (kyselina citrónová, bežné kyslé nápoje) na zníženie tvrdosti a odolnosti voči oteru. Zhoršenie vlastností kje možné predchádzať, alebo následne do istej miery eliminovať aplikáciou fluoridačných prípravkov, ktoré zabezpečujú zabudovanie fluóru do štruktúry zubnej skloviny. Sklokeramické syntetické dentálne materiály sú o niečo odolnejšie, napriek tomu však pri expozícii rádovo niekoľko hodín voči bežným kyslým médiám (nápojom) pri teplotách simulujúcich podmienky v ústnej dutine dochádza k merateľnému zníženiu mikrotvrdosti a odolnosti voči šmykovému oteru. Navrhli sa tiež mechanizmy korózie dentálnych materiálov. Vykonali sa tiež experimenty zamerané na hodnotenie koróznej odolnosti zirkoničitej dentálnej keramiky a jej vplyvu na jej nízkoteplotnú degradáciu v podmienkach ústnej dutiny.

1/ P. GAALOVÁ - A. SVANČÁRKOVÁ - J. BALKO - D. GALUSKOVÁ - F. LOFAJ - D. GALUSEK, Corrosion in acidic media, micromechanical properties and wear of human tooth enamel, 14th International Conference of the European Ceramic Society, June 21-25, 2015, Toledo, Spain

2/ A. SVANČÁRKOVÁ - D. GALUSKOVÁ - P. GAALOVÁ - J. BALKO - M. FIDES - D. GALUSEK, Effect of heat treatment on mechanical properties and corrosion resistance of lithium disilicate dental glass ceramics, pp. 55-58 in: Proceedings oft he the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015, Ed. By F. Lofaj, M. Hnatko, B. Plešinegrová, G. Sučík, D. Horkavcová, and M. Fabián, ISBN 978-80-553-2122-6

3/ P. GAALOVÁ - D. GALUSKOVÁ - A. SVANČÁRKOVÁ - J. BALKO - D. GALUSEK, Corrosion of natural and synthetic biomaterials in acidic media and its effect on mechanical properties, pp. 64-67 in: Proceedings oft he the XIth International Conference Preparation of Ceramic Materials, June 9-11, Herlany, 2015, Ed. By F. Lofaj, M. Hnatko, B. Plešinegrová, G. Sučík, D. Horkavcová, and M. Fabián, ISBN 978-80-553-2122-6

4/ D. GALUSKOVÁ - A. SVANČÁRKOVÁ - P. GAALOVÁ - J. BALKO - F. LOFAJ, D. GALUSEK, Evaluation of chemical stability and corrosion of dental glass-ceramics in aqueous acidic solutions and its influence on micromechanical properties, ID: 01890, 14th International Conference of the European Ceramic Society, June 21-25, 2015, Toledo, Spain

15.) Vývoj vodivej keramiky na báze SiC *(Development SiC based conductive ceramics)*

Zodpovedný riešiteľ:	Pavol Hvizdoš
Zodpovedný riešiteľ v organizácii SAV:	Pavol Šajgalík
Trvanie projektu:	1.10.2013 / 30.9.2017
Evidenčné číslo projektu:	APVV-0108-12
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	APVV: 11636 €

Dosiahnuté výsledky:

Kompozity na báze karbidu kremičitého boli pripravené zmiešaním karbidu kremičitého (SiC), titánu (Ti) a karbidu nióbu (NbC) v planetárnom mlyne. Samotná príprava pozostávala z dvojstupňového spekania pri teplotách 1650 °C a 1850 °C. Pripravené boli hutné vzorky s 30, 40, 50 % prídavkom Ti-NbC fázy. Vzorky boli charakterizované RTG difrakciou, elektrónovou mikroskopiou. Na vzorkách boli zmerané nízkoteplotné mechanické vlastnosti. Najvyššiu

tvrdosť má vzorka so 40 % prídavkom Ti-NbC fázy, najvyššiu lomovú húževnatosť má vzorka s 50 % prídavkom TiNbC. Takisto boli zmerané elektrické a tepelné vlastnosti, z ktorých vyplýva, že so stúpajúcim prídavkom Ti-NbC rastie elektrická vodivosť a klesá tepelná difuzivita.

Publikácie:
1/ BYSTRICKÝ, Roman - HNATKO, Miroslav - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol. Study of densification process in Si3N4-Y2O3-SiO2-C system. In 14th International conference European Ceramic Society, june 21-25, 2015 : book of abstracts. - Toledo, España, 2015, ISBN 978-84-606-9257-7.
2/ CSANÁDI, Tamás - CHINH, Nguyen Quang - SZOMMER, Péter - DUSZA, Ján - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol. Deformation and fracture of ?-silicon nitride micropillars. In Journal of the American Ceramic Society, 2015, vol. 98, no. 2, p. 374-377. (2.610 - IF2014). ISSN 0002-7820.
3/ KOVALČÍKOVÁ, Alexandra - LENČÉŠ, Zoltán - SEDLÁČEK, Jaroslav - ŠAJGALÍK, Pavol - DUSZA, Ján - IGNÁCZ, Martin - MIHALIKOVÁ, Mária, Ing., PhD. Oxidation resistance of SiC ceramics prepared by different processing routes. In Preparation of ceramic materials : Proceedings of the 11th international conference. Herľany, 9.-11.6.2015. Ed. František Lofaj, Miroslav Hnatko a kol. - Košice : Technical University, 2015, p. 40-43. ISBN 978-80-553-2122-6.

16.) Štruktúra a vlastnosti oxidových skiel určených na aplikácie v jadrovej energetike *(Structure and properties of oxide glasses for application in nuclear power technology)*

Zodpovedný riešiteľ:	Mária Chromčíková
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0487-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Trenčianska univerzita Alexandra Dubčeka v Trenčíne
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 23550 €

Dosiahnuté výsledky:
Okrem výsledkov, ktoré sú v súlade s plánom riešenia projektu sa dosiahol mimoriadny výsledok spočívajúci v preukázaní mechanickej degradácie sklovláknitých izolácií používaných v kontainmente jadrového reaktora vplyvom vysokoteplotnej expozície gama žiarením. Tento výsledok bude publikovaný vo februárovom čísle časopisu Americkej jadrovej spoločnosti (Nuclear technology, kód MS# - NT15-22R2)

17.) Fotoluminescenčné keramické materiály na báze oxynitridov kremíka *(Silicon oxynitride-based photoluminescent ceramic materials)*

Zodpovedný riešiteľ:	Zoltán Lenčéš
Trvanie projektu:	1.7.2015 / 30.6.2019
Evidenčné číslo projektu:	APVV-14-0385
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	APVV: 17552 €

Dosiahnuté výsledky:
Luminofory na báze oxinitridov kremíka (SiAlONy) boli pripravené z polymérneho prekurzoru na báze polysilsequioxánu a alumatránu. Samotná príprava pozostávala zo zosieťovania a pyrlýzy polyméru a následnej karbotermockej redukcie a nitridácie. Ako dopanty boli použité oxidy kovov vzácnych zemín: Eu2O3, Sm2O3 a CeO2.

- Luminofor SiAlON:Eu emituje v oranžovej oblasti viditeľného svetla
- luminofor SiHfON:Eu emituje v zeleno-žltej oblasti viditeľného svetla
- luminofor SiLuON:Eu emituje v zelenej oblasti viditeľného svetla

Metódou MOCVD boli pripravené tenké fotoluminescenčné vrstvy YAG:Ce a YAG:Eu na kremenných sklíčkach. YAG:Ce emituje žiarenie v zelenej oblasti viditeľného svetla.

Publikácie:
1/ I. IBRAHIM - Z. LENČÉŠ - Ľ. BENCO - P. ŠAJGALÍK. Lanthanide-doped LaSi3N5 based phosphors: Ab initio study of electronic structures, band gaps and energy level locations. Journal of Luminescence, in press, LUMIN-2015-119.

18.) Genéza perlitu a inovatívne prístupy pri jeho ťažbe a spracovaní *(Perlite genesis and innovative approaches to its exploitation and processing)*

Zodpovedný riešiteľ:	Jana Madejová
Trvanie projektu:	1.10.2013 / 30.9.2017
Evidenčné číslo projektu:	APVV-0339-12
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Prírodovedecká fakulta UK
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	APVV: 12746 €

Dosiahnuté výsledky:
V ďalšom roku riešenie projektu sa pokračovalo v experimentoch zameraných na sledovanie obsahu vody vo vzorkách perlitov zo slovenského ložiska Lehôtka pod Brehmi. Obsah a spôsob viazania vody významne vplýva na výsledné vlastnosti expandovaného perlitu, a teda aj na spôsoby jeho aplikácie. Vzorky sa systematicky odoberali z rôznych miest ložiska a z rôznych hĺbok. Na stanovenie charakteru a množstva vody sa použili metódy gravimetrie, termickej analýzy a infračervenej spektroskopie, ako aj 1H NMR spektroskopie. Množstvo vody v neupravených perlitoch sa pohybovalo v rozmedzí do 4 %. Spojením IČ spektroskopie s gravimetriou sa vypracovala semikvantitatívna metóda na sledovanie zmien obsahu vody vo vzorkách. Celkovo vzorky perlitu vykazovali len veľmi nízku adsorpciu vody. Hydratačné schopnosti perlitu sa porovnali s hydratáciou ílových minerálov zo slovenského ložiska Jelšový potok. Ílové minerály sa veľmi často vyskytujú ako prímesi v hornine perlitu, a ako materiál, ktorý vykazujú vysokú afinitu k vode môže ovplyvňovať celkovú adsorpciu vody na perlit. Typy vody prítomné vo vzorkách sa sledovali aj použitím špeciálneho zariadenia k IČ spektrometru – vysokoteplotnej cely. Sledovali sa zmeny v intenzitách pásov vody so stúpajúcou teplotou. Na základe spektier sa zistilo, že napriek vysokej teplote 700°C, vzorky stále obsahujú malé percento silne viazanej, tzv. štruktúrnej vody.

Výsledky boli prezentované na konferenciách:
1/ H. PÁLKOVÁ - V. BIZOVSKÁ - J. MADEJOVÁ - M. SLANÝ - A. CZÍMEROVÁ - V. HRONSKÝ - P. UHLÍK - J. LEXA. Analysis of water content in raw perlite samples. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th july 2015, Edinburgh, Scotland, 2015, p. 263.
2/ P. UHLÍK - P. VARGA - H. PÁLKOVÁ - J. LEXA. Voda v perlite - termická analýza. In Geochémia 2015: Zborník vedeckých príspevkov z konferencie. Editor Ľ. Jurkovič, I. Slaninka, O. Ďurža; rec. E. Hiller, P. Ivan, P. Koděra, J. Milička, J. Kordík, I. Slaninka, Ľ. Jurkovič, P. Šottník, B. Voleková, Bratislava: Štátny geologický ústav Dionýza Štúra, 2015, s. 163-165.
Publikácia:
V. BIZOVSKÁ - H. PÁLKOVÁ - J. MADEJOVÁ, Hydration of homo-ionic forms of montmorillonite as studied by near-infrared spectroscopy, Clays and Clay Minerals (odoslaná v januári 2016)

19.) Polyaplikovateľné heterocykly - návrh štruktúry, syntéza a vlastnosti *(Polyaplicable heterocycles - design, synthesis and properties)*

Zodpovedný riešiteľ:	Ľubomír Smrčok
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Fakulta chemickej a potravinárskej technológie STU
Počet spoluriešiteľských	0

inštitúcií:
Čerpané financie: APVV: 3762 €

Dosiahnuté výsledky:
Presnými výpočtami na molekulovej úrovni sme analyzovali povahu medzimolekulových vodíkových väzieb typu N-H...N a C-H...N v kryštálovej štruktúre metyl 3-((benzimidazol-4(7)-yl) amino)-2-kyano-prop-2-enoátu, vyriešenej kombináciou rtg práškovej difrakcie a DFT výpočtu v tuhej fáze. Cieľom analýzy bolo spoľahlivo odhadnúť veľkosť disperznej zložky energie vodíkových väzieb, ktorá je svojou významnosťou druhá, hneď za dominantným elektrostatickým podielom.. Zistili sme, že tento podiel sa pre analyzované sústavy odvodené z kryštálovej štruktúry mení podľa povahy a geometrie vodíkovej väzby v relatívne širokom intervale, 25-50 % z celkovej energie vodíkovej väzby.

20.) Vývoj nitridu kremičitého s prídavkom multivrstiev grafénu. *(Development of Si3N4 with addition of graphene platelets)*

Zodpovedný riešiteľ: Monika Tatarková
Zodpovedný riešiteľ v organizácii SAV: Pavol Šajgalík
Trvanie projektu: 1.7.2012 / 31.12.2015
Evidenčné číslo projektu: APVV-0161-11
Organizácia je koordinátorom projektu: nie
Koordinátor:
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 14400 €

Dosiahnuté výsledky:
Predmetom výskumu bola príprava kompozitných materiálov na báze Si3N4 s prídavkom grafénu v rôznych formách: grafénové nanoplatničky alebo oxid grafénu. V tejto etape sa nám podarilo syntetizovať oxid grafénu, ktorý bol následne charakterizovaný viacerými metódami: XRD, SEM, FTIR, DTA-TG, Ramanova spektroskopia. Následne boli pripravené kompozitné prášky s obsahom oxidu grafénu pomocou planetárneho mletia. Pripravené kompozitné prášky boli žiarovo lisované pri rôznych teplotách. Z pohľadu meraných mechanických vlastností (tvrdosť a lomová húževnatosť) pri rôznych zaťaženiach vyplýva, že porovnateľné alebo mierne lepšie hodnoty týchto vlastností sú pri kompozitoch, ktoré obsahujú „jemnú“ frakciu grafénových nanoplatničiek. Naopak pri kompozitných materiáloch s „usadenou“ frakciou grafénových nanoplatničiek došlo k poklesu tvrdosti aj lomovej húževnatosti pripravených materiálov. Z pohľadu funkčných vlastností sa podarilo prídavkom „jemnej“ frakcie grafénových nanoplatničiek a oxidu grafénu zlepšiť tepelnú difuzivitu kompozitov v porovnaní s referenčným materiálom.

Publikácie:
1/ KAŠIAROVÁ, Monika - MICHÁLKOVÁ, Monika - DUSZA, Ján - ŠAJGALÍK, Pavol. Scratch resistance of Si3N4-graphene nanoplatelets composites. In Key Engineering Materials, 2015, vol. 662, p. 165-168. (0.194 - IF2014). ISSN 1013-9826.
2/ KAŠIAROVÁ, Monika - MICHÁLKOVÁ, Monika - HANZEL, Ondrej - DUSZA, Ján - ŠAJGALÍK, Pavol. Silicon nitride reinforced by graphene nanoplatelets. In Advanced research workshop Engineering Ceramics 2015, materials for better life, Smolenice castle, may 10-14, 2015 : book of abstracts. - Bratislava, Slovakia : Institute of Inorganic Chemistry SAS, 2015, p. 50. ISBN 978-80-971648-3-6

Programy: Štrukturálne fondy EÚ Výskum a vývoj

21.) Univerzitný vedecký park STU Bratislava *(University Science Park of STU Bratislava)*

Zodpovedný riešiteľ: Miroslav Boča
Trvanie projektu: 1.2.2013 / 31.10.2015
Evidenčné číslo projektu: 26240220084
Organizácia je nie

koordinátorom projektu:	
Koordinátor:	Slovenská technická univerzita v Bratislave
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	

Dosiahnuté výsledky:

22.) Kompetenčné centrum pre nové materiály, pokročilé technológie a energetiku *(Competence center for new materials, advanced technologies and energy)*

Zodpovedný riešiteľ:	Karol Fröhlich
Zodpovedný riešiteľ v organizácii SAV:	Miroslav Boča
Trvanie projektu:	1.6.2011 / 30.12.2015
Evidenčné číslo projektu:	26240220073
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	14 - Slovensko: 14
Čerpané financie:	

Dosiahnuté výsledky:
BIZOVSKÁ, Valéria - JANKOVIČ, Ľuboš - MADEJOVÁ, Jana. Hydration properties of a montmorillonite saturated with octylammonium cations: effect of the alkyl-chains number and surfactant concentration. In EUROCLAY 2015. International conference on clay science and technology, 5th - 10th July 2015, Edinburgh, Scotland, p. 374

23.) Výskumné centrum ALLEGRO

Zodpovedný riešiteľ:	Dušan Galusek
Trvanie projektu:	1.4.2014 / 31.12.2015
Evidenčné číslo projektu:	ITMS 26220220198
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Slovenská akadémia vied
Počet spoluriešiteľských inštitúcií:	4 - Slovensko: 4
Čerpané financie:	MŠ: 316948 €

Dosiahnuté výsledky:
V rámci projektu sa dobudovalo experimentálne vybavenie pracoviska o modul Fluorocube pre Fluorescenčný spektrometer Horiba Flourolog, zakúpil sa modul na mikrodifrakciu pre RTG práškový difraltometer Panalytical Empyrean a náhradná katóda pre SEM JEOL 7600f. V rámci projektu sa na pracovisku vyvíjali nové typy protikoróznych povlakov na vysokoteplotnú ochranu kovov.

24.) Centrum aplikovaného výskumu nových materiálov a transferu technológií *(Center for applied research of new materials and technology transfer)*

Zodpovedný riešiteľ:	Juraj Lapin
Zodpovedný riešiteľ v organizácii SAV:	Miroslav Boča
Trvanie projektu:	1.3.2013 / 31.12.2015
Evidenčné číslo projektu:	ITMS 26240220088
Organizácia je koordinátorom projektu:	nie

Koordinátor:	
Počet spoluriešiteľských inštitúcií:	7 - Slovensko: 7
Čerpané financie:	MŠ: 56079 €

Dosiahnuté výsledky:

V rámci aktivity budovania centra bola koordinovaná činnosť dodávok a inštalácie zariadení v rámci projektu v priestoroch Laboratória keramických materiálov: grafitová tunelová pec, granulátor, homogenizátor, automatický lis, izostatický lis – CIP, vypalovacia pec a lapovačka.

V rámci aktivity 2.1 boli v Laboratóriu keramických materiálov realizované výskumné činnosti v oblasti keramických materiálov pre obranný priemysel, keramických kompozitov s funkčnými vlastnosťami, keramických biomateriálov, žiaruvzdorných materiálov a interakcii s taveninami. V oblasti keramických materiálov pre obranný priemysel boli optimalizované postupy prípravy materiálov na báze karbidov, SiC a B4C. Optimalizáciou prípravy práškových zmesí a ich úpravy bolo možné dosiahnuť homogénnu distribúciu spekacích prísad na minimálnej úrovni (eliminácia vplyvu na vlastnosti výsledných keramických materiálov), resp. jej úplné odstránenie. Následná optimalizácia procesu zhutňovania karbidových keramických materiálov viedla k príprave hutných materiálov (relatívna hutnosť 99,95%). Výskum v oblasti keramických kompozitov bol zameraný na ich aplikovateľnosť, t.j. prebiehala optimalizácia jednotlivých krokov prípravy kompozitov na báze Al_2O_3 a Si_3N_4 s homogénnou distribúciou uhlíkových nanoštruktúr, vo forme nanorúrok (CNT) a grafénu. V tejto oblasti bol optimalizovaný postup prípravy keramických kompozitov s homogénnou distribúciou uhlíkových nanoštruktúr. Bola vyvinutá nová metóda, ktorá spočíva v chemickej úprave CNT a/alebo grafénu, ich následnú homogenizáciu v disperzii keramickej matrice a v konečnom kroku vo vymrazovacej granulácii. V prípade kompozitov Si_3N_4-grafén nebol potvrdený výrazný efekt zhúževnatenia, nedošlo ani k výraznemu poklesu mechanických vlastností. Predbežné výsledky tepelných vlastností potvrdili mierne zvýšenie tepelnej difuzivity. V oblasti žiaruvzdorných materiálov prebiehal výskum zameraný najmä na nitridové a oxynitridové materiály. Prebiehala optimalizácia zloženia v závislosti od potenciálneho využitia v praxi a na pripravených materiáloch boli charakterizované vlastnosti. Táto oblasť výskumu bola realizovaná v spolupráci so zahraničným priemyselným partnerom (RHI AG).

25.) Znalostná databáza a expertný systém environmentálneho riešenia havárií straty chladiva v prevádzke jadrovej elektrárne - ZDESJE. *(Knowledge database and expert system for environmental friendly solutions of loss of coolant accidents in atomic nuclear power plants - ZDESJE.)*

Zodpovedný riešiteľ:	Marek Liška
Trvanie projektu:	1.4.2010 / 31.5.2015
Evidenčné číslo projektu:	ITMS 26220220072
Organizácia je koordinátorom projektu:	nie
Koordinátor:	VÚEZ, a.s.
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	MŠ: 1130 €

Dosiahnuté výsledky:

LIŠKA, Marek - CHROMČÍKOVÁ, Mária. Experimentálne skúmanie a spôsoby kvantifikácie viskoelasticity skiel. In 37. Mezinárodní český a slovenský kalorimetrický seminář : sborník příspěvků. - Pardubice : Univerzita Pardubice, 2015, s. 121-124. (2015 - Chemical abstracts). ISBN 978-80-7395-899-2.

26.) Priemyselný výskum pre potreby zefektívnenia unikátnej technológie tavenia a tvarovania úžitkového skla - PVTECHSKLO *(Industrial research for needs of the reengineering of the unique technology of the glass preparation and the forming work - PVTECHSKLO)*

Zodpovedný riešiteľ:	Peter Šimurka
Trvanie projektu:	1.4.2010 / 30.4.2015
Evidenčné číslo projektu:	ITMS kód: 26220220072
Organizácia je koordinátorom projektu:	nie
Koordinátor:	RONA, a. s.

Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	MŠ: 13870 €

Dosiahnuté výsledky:
Bola zorganizovaná medzinárodná konferencia Tableware glass melting and forming, ktorá sa konala v dňoch 19.2. – 20.2.2015 v Trenčianskych Tepliciach za účasti 56 zástupcov z ôsmich krajín sveta. Na konferencii boli odprezentované výsledky projektu vo forme 11 prednášok.

1/ P. VRÁBEL, Experience of industrial partner involved in a project supported by EU fund (RONA, a.s.)
2/ E. MUIJSENBERG, Impact of melting parameters on glass quality (Glass Service, a.s.)
3/ P. ŠIMURKA, Corrosion of AZS refractories – source of knots in tableware glass products (Institute of Inorganic Chemistry SAS)
4/ T. PAUČO, Interpretation of tableware glass melting CFD models in the production process (RONA, a.s.)
5/ J. ŠUŠKA, Influence of oxygen boosting to the glass melting efficiency (Messer Tatragas spol. s r.o.)
6/ P. SCHILL, Analysis of measured variables for optimal furnace control (Glass Service, a.s.)
7/ I. KOVÁČIK, Optical instability optimization during tableware production using blow-blow process (RONA, a.s.)
8/ M. LIŠKA, Structural relaxation and mechanical stress relaxation (Institute of Inorganic Chemistry SAS)
9/ I. MATOUŠEK, Application of TNM model to study of stress relaxation in glass (The Technical University of Liberec, CZ)
10/ E. MUIJSENBERG, Advances in electric boosting (Glass Service, a.s.)
11/ D. SPOLJARIC, Review of experiences and possibilities with oxygen enhanced combustion for glass melting (Messer Tatragas spol. s r.o.)

Publikácia:
1/ M. BREŽNÝ - B. FUSKOVÁ - D. HOLÝ - J. KALICKÁ - T. PAUČO, G. WIMMER, Gradientná metóda a optimálne nastavenie parametrov pri tavení skla Sklář a keramik, 1-2, 2015. s.

Programy: Štrukturálne fondy EÚ Bratislavský kraj

27.) Aplikovaný výskum a overenie technológií katalytickej dehalogenácie kontaminovaných vôd z priemyselných ekologických záťaží na reaktívnych bariérach *(Investigation and verification of catalytic dehalogenation on reactive barriers technologies - treatment of contaminated water from polluted industrial sites)*

Zodpovedný riešiteľ:	Adriana Czímerová
Trvanie projektu:	1.2.2014 / 30.10.2015
Evidenčné číslo projektu:	ITMS 26240220078
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Dekonta s. r. o.
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	MŠ: 456114 €

Dosiahnuté výsledky:
Znečisťovanie podzemných vôd chlórovanými uhľovodíkmi a ich odstraňovanie je aktuálnym problémom životného prostredia pre ich pomalý rozpad, toxicitu a karcinogenitu. Využitie redukčných vlastností železa pre ich dechloráciu je jednou z perspektívnych spôsobov pre riešenie tohto problému. Experimentálne overenie tejto metódy sa zameralo na najproblematickejšie látky tejto skupiny, akými sú pesticídy, vyznačujúce sa vysokou perzistenciou a toxicitou. V laboratórnych podmienkach bola skúmaná mikro a nano forma nulvalentného železa (ZVI) na dehalogenizáciu takýchto látok, pričom sa preukázalo, že touto metódou je možné z podzemnej vody odstrániť aj takéto látky s pomerne dobrou účinnosťou. Podarilo sa vyriešiť rad problémov súvisiacich so spôsobom ich aplikácie, tvorby reakčných produktov a medziproduktov a optimalizácie účinnosti procesov. Účinnosť aplikácie ZVI pri riešení znečistenia podzemných vôd v modelových a prírodných podmienkach bola preukázaná hlavne pre alifatické chlórované uhľovodíky, ktoré sa environmentálnymi technológiami, založenými na oxidácii a biologickej degradácii, odstraňovali len s malou účinnosťou a v niektorých prípadoch za tvorby produktov s vyššou toxicitou ako pôvodná látka. Na základe modelových experimentov na reakčných kolónach v laboratórnych podmienkach sa navrhla konštrukcia reakčnej bariéry, ktorá v priebehu roka aj bola uvedená do prevádzky v priestoroch Istrochemu v Bratislave. Dehalogenizácia

pomocou ZVI patrí v súčasnosti k najpokrokovejším environmentálnym technológiám, ktoré môžu poskytnúť finančne výhodné riešenie problémov spojených so znečistením životného prostredia a ochranou podzemných vôd. Eliminácia znečisťujúcich látok reaktívnymi stenami a bariérami pomocou metalických foriem železa umožňuje uplatnenie širokého spektra technologických variant, flexibilitu v samotnom spôsobe aplikácie a v samotnom použití rôznych typov materiálov.

1/ P. KOMADEL, Clays and clay minerals, Short articles based on the presentations provided on the NOVACEM workshop in Chorvátsky Grob on 5-6 May 2015, Ed.: Building Testing and Research Institute, ISBN: 978-80-971912-2-1
2/ A. CZÍMEROVÁ - A. ČEKLOVSKÝ - M. MATEJDES, Interaction of smectites with azine dyes, 4th International Conference on Multifunctional, Hybrid and Nanomaterials, 9-13 March 2015, Sitges, Spain, Book of abstacts P3.121
3/ A. BRTÁŇOVÁ - V. BIZOVSKÁ - H. PÁLKOVÁ - J. BRTKO, New dehalogenation method on permeable reactive barriers, effective method for removing old burdens, 4th International Conference on Multifunctional, Hybrid and Nanomaterials, 9-13 March 2015, Sitges, Spain, Book of abstacts
4/ H. PÁLKOVÁ - V. HRONSKÝ - V. BIZOVSKÁ - J. MADEJOVÁ, Spectroscopic studyof water adsorption on Li+, TMA+, and HDTMA+ exchanged montmorillonite, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 149 (2015) 751 – 761.
5/ M. HOUBEC - J. BRTKO - M. REŠETKA - S. LUTHER, Možnosti využitia nulmocného železa pre odstraňovanie chlórovaných uhľovodíkov, Vodohospodársky spravodajca, 59, 1-2, 2016, p. 21-24, ISSN: 0322-886X

Programy: Centrá excelentnosti SAV

28.) Centrum excelentnosti pre funkcionalizované viacfázové materiály *(Center of Excellence for Functionalized Multiphase Materials)*

Zodpovedný riešiteľ:	Marián Krajčí
Zodpovedný riešiteľ v organizácii SAV:	Pavol Šajgalík
Trvanie projektu:	1.8.2011 / 31.12.2015
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	5 - Slovensko: 5
Čerpané financie:	SAV: 2081 €

Dosiahnuté výsledky:
HANZEL, Ondrej - SEDLÁČEK, Jaroslav - HADZIMOVÁ, Eva - ŠAJGALÍK, Pavol. Thermal properties of alumina-MWCNTs composites. In Journal of the European Ceramic Society, 2015, vol. 35, no. 5, p. 1559-1567. (2.947 - IF2014). ISSN 0955-2219.
IBRAHIM, Ismail - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol - BENCO, Ľubomír. Electronic structure and energy level schemes of RE3+:LaSi3N5 and RE2+:LaSi3N5-xOx phosphors (RE = Ce, Pr, ND, Pm, Sm, Eu) from first principles. In Journal of Luminescence, 2015, vol. 164, p. 131-137. (2.719 - IF2014). ISSN 0022-2313.

Programy: SASPRO

29.) Vlastnosti materiálov po vysokoteplotných koróziách v roztopených soliach *(High-temperature properties of materials corrosion in molten salts)*

Zodpovedný riešiteľ:	Miroslav Boča
Trvanie projektu:	5.11.2015 / 4.11.2018
Evidenčné číslo projektu:	1119/02/02
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských	0

inštitúcií:
Čerpané financie: SAV: 3478 €
SAV EÚ: 2319 €

Dosiahnuté výsledky:

Príloha C - Publikačná činnosť organizácie (*generovaná z ARL*)

ADCA Vedecké práce v zahraničných karentovaných časopisoch impaktovaných

ADCA01 ASHER, James Richard - MALKIN, Vladimír - MALKINA, Oľga. Visualization of the four-component g-tensor density as a three-dimensional function. In Chemical Physics Letters, 2015, vol. 636, p. 46-50. (1.897 - IF2014). (2015 - Current Contents). ISSN 0009-2614.

ADCA02 BAŇACKÝ, P. - NOGA, Pavol - SZÖCS, Vojtech - NOGA, Jozef. Large diameter multiwall nanotubes of MgB2: structural aspects and stability of superconducting nanotubular magnesium boride. In Physica status solidi B. Basic solid state physics, 2015, vol. 252, no. 9, p. 2052-2058. (1.489 - IF2014). (2015 - Current Contents, WOS, SCOPUS). ISSN 0370-1972.

ADCA03 BELUŠÁKOVÁ, Silvia - LANG, Kamil - BUJDÁK, Juraj. Hybrid systems based on layered silicate and organic dyes for cascade energy transfer. In Journal of Physical Chemistry C, 2015, vol. 119, p. 21784-21794. (4.772 - IF2014). (2015 - Current Contents). ISSN 1932-7447.

ADCA04 BOČA, Miroslav - RAKHMATULLIN, Aydar - MLYNÁRIKOVÁ, Jarmila - HADZIMOVÁ, Eva - VASKOVÁ, Zuzana - MIČUŠÍK, Matej. Differences in XPS and solid state NMR spectral data and thermo-chemical properties of iso-structural compounds in the series KTaF6, K2TaF7 and K3TaF8 and KNbF6, K2NbF7 and K3NbF8. In Dalton Transactions, 2015, vol. 44, p. 17106-17117. (4.197 - IF2014). (2015 - Current Contents). ISSN 1477-9226.

ADCA05 BODIŠOVÁ, Katarína - GALUSEK, Dušan - ŠVANČÁREK, Peter - POUCHLÝ, Václav - MACA, Karel. Grain growth suppression in alumina via doping and two-step sintering. In Ceramics International, 2015, vol. 41, no. 9, p. 11975-11983. (2.605 - IF2014). (2015 - Current Contents). ISSN 0272-8842.

ADCA06 BROSKA, Igor - KROGH RAVNA, E. J. - VOJTKO, Peter - JANÁK, Marian - KONEČNÝ, Patrik - PENTRÁK, Martin - BAČÍK, Peter - LUPTÁKOVÁ, Jarmila - KULLERUD, K. Oriented inclusions in apatite in a post-UHP fluid-mediated regime (Tromsø Nappe, Norway). In European Journal of Mineralogy, 2014, vol. 26, no. 5, p. 623-634. (1.506 - IF2013). (2014 - Current Contents). ISSN 0935-1221.

ADCA07 BUČKO, Tomáš - HAFNER, Jürgen. The role of spatial constraints and entropy in the adsorption and transformation of hydrocarbons catalyzed by zeolites. In Journal of Catalysis, 2015, vol. 329, p. 32-48. (6.921 - IF2014). (2015 - Current Contents). ISSN 0021-9517.

ADCA08 BUJDÁK, Juraj. Effect of layer charge on the formation of polymer/layered silicate nanocomposites: Intercalation of polystyrene. In Journal of Physical Chemistry C, 2015, vol.119, p. 12016-12022. (4.772 - IF2014). (2015 - Current Contents). ISSN 1932-7447.

ADCA09 CSANÁDI, Tamás - CHINH, Nguyen Quang - SZOMMER, Péter - DUSZA, Ján - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol. Deformation and fracture of β-silicon nitride micropillars. In Journal of the American Ceramic Society, 2015, vol. 98, no. 2, p. 374-377. (2.610 - IF2014). (2015 - Current Contents). ISSN 0002-7820.

ADCA10 ČAVAJDA, V. - UHLÍK, Peter - DERKOWSKI, Arkadiusz - ČAPLOVIČOVÁ, Mária - MADEJOVÁ, Jana - MIKULA, M. - IFKA, Tomáš. Influence of grinding and sonication on the crystal structure of talc. In Clays and Clay Minerals, 2015, vol. 63, n. 4, p. 311-327. (1.228 - IF2014). (2015 - Current Contents). ISSN 0009-8604.

ADCA11 DONAUEROVÁ, Alena - BUJDÁK, Juraj - SMOLINSKÁ, Miroslava - BUJDÁKOVÁ, Helena. Photophysical and antibacterial properties of complex systems based on smectite, a cationic surfactant and methylene blue. In Journal of Photochemistry and Photobiology : B: Biology, 2015, vol. 151, p. 135-141. (2.960 - IF2014). (2015 - Current Contents). ISSN 1011-1344.

ADCA12 DRÁBIK, Milan - GÁLIKOVÁ, Ľubica - SCHOLTZOVÁ, Eva - HADZIMOVÁ, Eva. Thermoanalytical events and enthalpies of selected phases and systems of the chemistry and technology of concrete. Part I. Calcium-silicate-aluminate-sulfate hydrates. In Ceramics-Silikáty, 2014, vol. 58, no. 3, p. 184-187. (0.434 - IF2013). (2014 - Current Contents). ISSN 0862-5468.

ADCA13 DRÁBIK, Milan - GÁLIKOVÁ, Ľubica - SCHOLTZOVÁ, Eva - HADZIMOVÁ, Eva. Thermoanalytical events and enthalpies of phases and systems of the chemistry and technology of concrete. Part II. Hydrated cements. In Ceramics-Silikáty, 2014, vol. 58, no. 4, p. 243-248. (0.434 - IF2013). (2014 - Current Contents). ISSN 0862-5468.

ADCA14 DVUREČENSKIJ, Andrej - CIGÁŇ, Alexander - BYSTRICKÝ, Roman - ŠKRÁTEK, Martin - BILLIK, Peter - MAJEROVÁ, Melinda - MAŇKA, Ján. Magnetic studies of EuBa2Cu3-xRuxO7-δ compounds. In Acta Physica Polonica A, 2015, vol. 127, no. 2, p. 300-302. (0.530 - IF2014). (2015 - Current Contents, WOS, SCOPUS). ISSN 1898-794X.

ADCA15 FRIDRICHOVÁ, Jana - BAČÍK, Peter - RUSINOVÁ, Petra - ANTAL, Peter - ŠKODA, Radek - BIZOVSKÁ, Valéria - MIGLIERINI, Marcel. Optical and crystal-chemical changes in aquamarines and yellow beryls from Thanh Hoa province, Vietnam induced by heat treatment. In Physics and

chemistry of minerals, 2015, vol. 42, p. 287-302. (1.538 - IF2014). (2015 - Current Contents). ISSN 0342-1791.

ADCA16 GALUSEK, Dušan - SEDLÁČEK, Jaroslav - CHOVANEC, Jozef - MICHÁLKOVÁ, Monika. The influence of MgO, Y2O3 and ZrO2 additions on densification and grain growth of submicrometre alumina sintered by SPS and HIP. In Ceramics International, 2015, vol. 41, p. 9692-9700. (2.605 - IF2014). (2015 - Current Contents). ISSN 0272-8842.

ADCA17 GALUSEK, Dušan - GALUSKOVÁ, Dagmar. Alumina matrix composites with non-oxide nanoparticle addition and enhanced functionalities. In NANOMATERIALS-BASEL, 2015, vol. 5, no. 1, p. 115-143. (2.076 - IF2014). (2015 - Current Contents). ISSN 2079-4991.

ADCA18 GAMBA, Martina - FLORES, Federico M. - MADEJOVÁ, Jana - TORRES SÁNCHEZ, Rosa M. Comparison of imazalil removal onto montmorillonite and nanomontmorillonite and adsorption surface sites involved: an approach for agricultural wastewater treatment. In Industrial & Engineering Chemistry Research, 2015, vol. 54, p. 1529-1538. (2.587 - IF2014). (2015 - Current Contents). ISSN 0888-5885.

ADCA19 HANZEL, Ondrej - SEDLÁČEK, Jaroslav - HADZIMOVÁ, Eva - ŠAJGALÍK, Pavol. Thermal properties of alumina-MWCNTs composites. In Journal of the European Ceramic Society, 2015, vol. 35, no. 5, p. 1559-1567. (2.947 - IF2014). (2015 - Current Contents). ISSN 0955-2219.

ADCA20 HARMATOVÁ, Z. - JÓNA, Eugen - MEDVECKÁ, J. - VALIGURA, D. - JANÍKOVÁ, V. - PAVLÍK, Viliam - DURNÝ, R. - LIZÁK, P. - MOJUMDAR, Subhash Chandra. Thermal properties of solid complexes with biologically important heterocyclic ligands. Part VI. Thermal and spectral study of dimeric halogenobenzoato Cu(II) complexes with N,N-diethylnicotinamide. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 119, no. 2, p. 959-962. (2.042 - IF2014). (2015 - Current Contents). ISSN 1388-6150.

ADCA21 CHROMČÍKOVÁ, Mária - LIŠKA, Marek - ZEMANOVÁ, Vladimíra - PLŠKO, Alfonz - HRUŠKA, Branislav - GAVENDA, Tadeáš. Thermodynamic model and Raman spectra of CaO-P2O5 glasses. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 121, no. 1, p. 269-274. (2.042 - IF2014). (2015 - Current Contents). ISSN 1388-6150.

ADCA22 CHROMČÍKOVÁ, Mária - TEPLANOVÁ, Magdaléna - PLŠKO, Alfonz - LISSOVÁ, Magdaléna - LIŠKA, Marek. Crystallization kinetics of borosilicate glasses for CHROMPIC nuclear waste vitrification. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B, 2015, vol. 56, no. 1, p. 49-52. (0.691 - IF2014). (2015 - Current Contents). ISSN 1753-3562.

ADCA23 IBRAHIM, Ismail - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol - BENCO, Ľubomír. Electronic structure and energy level schemes of RE3+:LaSi3N5 and RE2+:LaSi3N5-xOx phosphors (RE=Ce, Pr, ND, Pm, Sm, Eu) from first principles. In Journal of Luminescence, 2015, vol. 164, p. 131-137. (2.719 - IF2014). (2015 - Current Contents). ISSN 0022-2313.

ADCA24 IBRAHIM, Ismail - LENČÉŠ, Zoltán - BENCO, Ľubomír - ŠAJGALÍK, Pavol. Ab initio study of the electronic structure and band gaps of Eu-doped LaSi3N5 phosphors: A role of oxygen atom. In Journal of the European Ceramic Society, 2015, vol. 35, no. 12, p. 3249-3253. (2.947 - IF2014). (2015 - Current Contents). ISSN 0955-2219.

ADCA25 JANKOVIČ, Ľuboš - KRONEK, Juraj - MADEJOVÁ, Jana - HRONSKÝ, Viktor. (9,10-Dihydroxyoctadecyl)ammonium: A structurally unique class of clay intercalable surfactants. In European Journal of Inorganic Chemistry, 2015, p. 2841-2850. (2.942 - IF2014). (2015 - Current Contents). ISSN 1434-1948.

ADCA26 KAVECKÝ, Štefan - VALÚCHOVÁ, Jana - ČAPLOVIČOVÁ, Mária - HEISSLER, Stefan - ŠAJGALÍK, Pavol - JANEK, Marián. Nontronites as catalyst for synthesis of carbon nanotubes by catalytic chemical vapor deposition. In Applied Clay Science, 2015, vol. 114, p. 170-178. (2.467 - IF2014). (2015 - Current Contents). ISSN 0169-1317.

ADCA27 KERNER, Lukáš - KICKOVÁ, Anna - FILO, Juraj - KEDŽUCH, Stanislav - PUTALA, Martin. Elucidation of photoisomerization-related structural changes in an acrylamide-bridged binaphthalene-diazene macrocyclic chiroptical switch by experimental electronic circular dichroism spectra simulation: role of dispersion corrections. In Journal of Physical Chemistry A.Molecules, spectroscopy, kinetics, environment, and general theory, 2015, vol. 119, p. 8588-8598. (2.693 - IF2014). (2015 - Current Contents). ISSN 1089-5639.

ADCA28 KORENKO, Michal - VASKOVÁ, Zuzana - ŠIMKO, František - ŠIMURDA, Michal - AMBROVÁ, M. - SHI, Zhong-ning. Electrical conductivity and viscosity of cryolite electrolytes for solar grade silicon (Si-SoG) electrowinning. In Transactions of Nonferrous Metals Society of China, 2014, vol. 24, p. 3944-3948. (1.001 - IF2013). (2014 - Current Contents). ISSN 1003-6326.

ADCA29 KORENKO, Michal - VASKOVÁ, Zuzana - PRIŠČÁK, Jozef - ŠIMKO, František - AMBROVÁ, M. - SHI, Zhongning. Density, viscosity and electrical conductivity of the molten cryolite electrolytes (Na3AlF6-SiO2) for solar grade silicon (Si-SoG) electrowinning. In NEW SZP IF 2012: SILICON-NETH, 2015, vol. 7, no. 3, p. 261-267. (1.069 - IF2014). (2015 - Current Contents). ISSN 1876-990X.

ADCA30 KŘÍSTKOVÁ, Anežka - KOMOROVSKÝ, Stanislav - REPISKÝ, Michal - MALKIN, Vladimír - MALKINA, Oľga. Relativistic four-component calculations of indirect nuclear spin-spin couplings with efficient evaluation of the exchange-correlation response kernel. In Journal of Chemical Physics, 2015, vol. 142, p. 114102-1-114102-10. (2.952 - IF2014). (2015 - Current Contents). ISSN 0021-9606.

ADCA31 LAZAR, Petr - BUČKO, Tomáš - HAFNER, Jürgen. Negative thermal expansion of ScF3: Insights from density-functional molecular dynamics in the isothermal-isobaric ensemble. In Physical Review B, 2015, vol. 92, no. 22, p. 224302-1-224302. (3.736 - IF2014). (2015 - Current Contents, WOS, SCOPUS). ISSN 1098-0121.

ADCA32 LE BAIL, Armel - SMRČOK, Ľubomír. Face-sharing octahedra in Cs3Al2F9 and Cs2AlF5. In Powder Diffraction, 2015, vol. 30, no. 2, p. 130-138. (0.636 - IF2014). (2015 - Current Contents). ISSN 0885-7156.

ADCA33 LIŠKA, Marek - MACHÁČEK, Jan - CHROMČÍKOVÁ, Mária - GEDEON, Ondrej. Thermodynamic model and structure of ZnO-MoO3-P2O5 glasses. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B, 2015, vol. 52, no. 2, p. 63-66. (0.691 - IF2014). (2015 - Current Contents). ISSN 1753-3562.

ADCA34 LIŠKA, Marek - LISSOVÁ, Magdaléna - PLŠKO, Alfonz - CHROMČÍKOVÁ, Mária - GAVENDA, Tadeáš - MACHÁČEK, Jan. Thermodynamic model and Raman spectra of ZnO-P2O5 glasses. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 121, no. 1, p. 85-91. (2.042 - IF2014). (2015 - Current Contents). ISSN 1388-6150.

ADCA35 LODUHOVÁ, M. - JÓNA, Eugen - BIZOVSKÁ, Valéria - PAVLÍK, Viliam - DURNÝ, R. - HARMATOVÁ, Z. - JANÍK, R. - JANKUROVÁ, Z. - MOJUMDAR, Subhash Chandra. Thermal, spectral and diffraction properties of Hg(II)-exchanged montmorillonite with alkylamines. In Journal of Thermal Analysis and Calorimetry, 2015, vol. 119, p. 879-884. (2.042 - IF2014). (2015 - Current Contents). ISSN 1388-6150.

ADCA36 MADEJOVÁ, Jana - PÁLKOVÁ, Helena - JANKOVIČ, Ľuboš. Near-infrared study of the interaction of pyridine with acid-treated montmorillonite. In Vibrational Spectroscopy, 2015, vol. 76, p. 22-30. (2.003 - IF2014). (2015 - Current Contents). ISSN 0924-2031.

ADCA37 MATEJDES, Marián - CZÍMEROVÁ, Adriana - JANEK, Marián. Fluorescence tuning of 2D montmorillonite optically active layers with beta-cyclodextrine/dye supramolecular complexes. In Applied Clay Science, 2015, vol. 114, p. 9-19. (2.467 - IF2014). (2015 - Current Contents). ISSN 0169-1317.

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2. [1.1] WU, Jianfeng - LIU, Meng - XU, Xiaohong - ZHANG, Yaxiang - LAO, Xinbin. A Novel Si3N4-SiC Ceramic Used for Volumetric Receivers. In INTERNATIONAL JOURNAL OF APPLIED CERAMIC TECHNOLOGY. ISSN 1546-542X, 2014, vol. 11, no. 2, pp. 246., WOS

ADCA381 ZHU, Xinwen - ZHOU, You - HIRAO, Kiyoshi - LENČÉŠ, Zoltán. Processing and thermal conductivity of sintered reaction-bonded silicon nitride: (II) Effects of magnesium compound and yttria additives. In Journal of the American Ceramic Society, 2007, vol. 90, no. 6, p. 1684-1692. (1.396 - IF2006). (2007 - Current Contents). ISSN 0002-7820.

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2. [1.1] WANG, Z.H. - BAI, B. - NING, X.S. Effect of rare earth additives on properties of silicon nitride ceramics. In ADVANCES IN APPLIED CERAMICS. ISSN 1743-6753, 2014, vol. 113, no. 3, pp. 173., WOS

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2. [1.1] HU, Hai-Long - ZENG, Yu-Ping - XIA, Yong-Feng - YAO, Dong-Xu - ZUO, Kai-Hui - GUENSTER, Jens - HEINRICH, Juergen G. Rapid fabrication of porous Si3N4/SiC ceramics via nitridation of silicon powder with ZrO2 as catalyst. In CERAMICS INTERNATIONAL. ISSN 0272-8842, 2014, vol. 40, no. 5, pp. 7579., WOS
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4. [1.1] WANG, Z.H. - BAI, B. - NING, X.S. Effect of rare earth additives on properties of silicon nitride ceramics. In ADVANCES IN APPLIED CERAMICS. ISSN 1743-6753, 2014, vol. 113, no. 3, pp. 173., WOS
5. [1.1] YAO, Dongxu - XIA, Yongfeng - ZUO, Kai-Hui - JIANG, Dongliang - GIINSTER, Jens - ZENG, Yu-Ping - HEINRICH, Jurgen G. The effect of fabrication parameters on the mechanical properties of sintered reaction bonded porous Si3N4 ceramics. In JOURNAL OF THE EUROPEAN CERAMIC SOCIETY. ISSN 0955-2219, 2014, vol. 34, no. 15, pp. 3461., WOS

ADCA383 ZIMOWSKA, Malgorzata - PÁLKOVÁ, Helena - MADEJOVÁ, Jana - DULA, Roman - PAMIN, Katarzyna - OLEJNICZAK, Zbigniew - GIL, Barbara - SERWICKA, Ewa M. Laponite-derived porous clay heterostructures: III. The effect of alumination. In Microporous and Mesoporous Materials, 2013, vol. 175, p. 67-75. (3.365 - IF2012). (2013 - Current Contents).

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ADCB Vedecké práce v zahraničných karentovaných časopisoch neimpaktovaných

ADCB01 FRAJKOROVÁ, Františka - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol. Electrically conductive silicon carbide without oxide sintering additives. In Journal of the Korean Ceramic Society, 2012, vol. 49, no. 4, p. 342-346. (2012 - SCOPUS). ISSN 1229-7801.

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ADCB02 FRANKOVSKÁ, J. - ANDREJKOVIČOVÁ, Slávka - JANOTKA, Ivan. Effect of NaCl on hydraulic properties of bentonite and bentonite-palygorskite mixture. In Geosynthetics International, 2010, vol. 17, no. 4, p. 250-259. (2010 - Current Contents). ISSN 1072-6349.

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2. [1.1] GHESQUIERE, Pierre - TALBI, Dahbia - KARTON, Amir. The reaction of the benzene cation with acetylenes for the growth of PAHs in the interstellar medium. In CHEMICAL PHYSICS LETTERS. ISSN 0009-2614, 2014, vol. 595, no., pp. 13., WOS
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ADDA01 ANDREJKOVIČOVÁ, Slávka - MADEJOVÁ, Jana - CZÍMEROVÁ, Adriana - GALKO, Igor - DOHRMANN, Reiner - KOMADEL, Peter. Mineralogy and chemistry of Fe-rich bentonite from the Lieskovec deposit (Central Slovakia). In Geologica Carpathica, 2006, vol. 57, no. 5, p. 371-378. (0.449 - IF2005). (2006 - Current Contents). ISSN 1335-0552.

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ADDA03 BOČA, Miroslav - KUCHARÍK, Marián - VASILJEV, Roman - DANĚK, V.. Surface tension of melts of the system KF-K2MoO4-SiO2. In Chemical Papers - Chemické zvesti, 2003, vol. 57, no. 2, p. 68-72. (2003 - Current Contents). ISSN 0366-6352.

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ADDA04 HRACHOVÁ, Jana - CHODÁK, Ivan - KOMADEL, Peter. Modification and characterization of montmorillonite fillers used in composites with vulcanized natural rubber. In Chemical papers, 2009, vol. 63, no. 1, p. 55-61. (0.758 - IF2008). (2009 - Current Contents). ISSN 0366-6352.

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ADDA05 MADEJOVÁ, Jana - KRAUS, Ivan - TUNEGA, Daniel - ŠAMAJOVÁ, Eva. Fourier transform infrared spectroscopic characterization of kaolinite group minerals from the main Slovak deposits. In Geologica Carpathica clays.Series clays, 1997, vol. 1, no. 1, p. 3-10. ISSN 1210-2695.

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1. [1.1] TARLTON, Michael L. - ANDERSON, Alexander E. - WEBERSKI, Michael P. - RIART-FERRER, Xavier - NELSON, Brandon M. - MCLAUCHLAN, Craig C. Synthesis, characterization, and electrochemical properties of mu-oxalate bridged vanadium(III) and (IV) dimers incorporating the Klaui ligand, (CpPCo)-Co-OR (R = Me, Et). In INORGANICA CHIMICA ACTA. ISSN 0020-1693, 2014, vol. 420, no., pp. 159., WOS

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Carpathica, 2009, vol. 60, no. 5, p. 431-436. (1.081 - IF2008). (2009 - Current Contents). ISSN 1335-0552.

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ADDA08 ŠIMKO, František - DANĚK, V.. Cryoscopy in the system Na3AlF6-Fe2O3. In Chemical Papers - Chemické zvesti, 2001, vol. 55, no. 5, p. 269-272. ISSN 0366-6352.

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1. [1.1] BARBORIK, Peter - VASKOVA, Zuzana - BOCA, Miroslav - PRISCAK, Jozef. Physicochemical properties of the system (LiF + NaF + KF(eut.) + Na7Zr6F31): Phase equilibria, density and volume properties, viscosity and surface tension. In JOURNAL OF CHEMICAL THERMODYNAMICS. ISSN 0021-9614, 2014, vol. 76, no., pp. 145., WOS

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ADEA Vedecké práce v ostatných zahraničných časopisoch impaktovaných

ADEA01 ŽIVICA, Vladimír - BALKOVIC, Svetozár - DRÁBIK, Milan. Properties of metakaolin geopolymer hardened paste prepared by high-pressure compaction. In Construction and Building Materials, 2011, vol. 25, p. 2206-2213. (1.366 - IF2010). (2011 - Thomson Reuters Master Journal List). ISSN 0950-0618.

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1. [1.1] ZHANG, Z. - PROVIS, J. L. - REID, A. - WANG, H. Geopolymer foam concrete: An emerging material for sustainable construction. In CONSTRUCTION AND BUILDING MATERIALS. ISSN 0950-0618, 2014, vol. 56, p. 113-127., WOS

ADEB Vedecké práce v ostatných zahraničných časopisoch neimpaktovaných

ADEB01 GALUSEK, Dušan - LENČÉŠ, Zoltán - ŠAJGALÍK, Pavol - RIEDEL, Ralf. Thermal analysis study of polymer-to-ceramic conversion of organosilicon precursors. In Journal of Mining and Metallurgy : Section B: Metallurgy, 2008, vol. 44, no. 1, p. 35-38. ISSN 1450-5339.

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1. [1.1] LAMONACA, F. - VASILE, M. - NASTRO, A. Hallux valgus: Measurements and characterization. In MEASUREMENT. ISSN 0263-2241, 2014, vol. 57, no., pp. 94., WOS

ADEB02 ŠAJGALÍK, Pavol - RAJAN, K. - WARBICHLER, P. - HOFFER, F. - DUSZA, Ján. Silicon nitride based nano- and micro-composites with enhanced mechanical properties. In Key Engineering Materials, 1999, vol. 159-160, p. 405-410. (1999 - SCOPUS). ISSN 1013-9826.

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1. [1.2] ALIAS, Mohd Noor - MUHAMMAD RABIU, Abbas - MUHAMMAD RABIU, Abbas - SRITHAR, Rajoo - MUHAMMAD HANAFI, Md Sah - NORHAYATI, Ahmad. Review on ceramic application in automotive turbocharged engines. In Applied Mechanics and Materials. ISSN 16609336, 2014-01-01, 660, pp. 219-228., SCOPUS

***AEF Vedecké práce v domácich nerecenzovaných vedeckých zborníkoch, monografiách**

AEF01 PETRUŠKOVÁ, V. - VRÁBEL, Peter - ŠAJGALÍK, Pavol. Mechanism of generation of tableware surface defects during dishwashing process. Viera Petrušková, Peter Vrábel, Pavol šajgalík. In 9th ESG Conference, 2008, Trenčín : Glass-The challenge for the 21st century. - Trenčín, 2008, S. 323-328, 2008, vol. 39-40, p. 323-328. ISBN 978-0-87849-387-6.

Citácie:

1. [1.1] MACAKOVA, Lubica - KJELLIN, Mikael - ANDERSSON, Martin - LOF, Leif - WNUKOWSKA, Halina. Rapid Assessment of Glass Etching/Corrosion using the Quartz Crystal Microbalance with Dissipation Monitoring, QCM-D. In TENSIDE SURFACTANTS DETERGENTS. ISSN 0932-3414, 2014, vol. 51, no. 6, pp. 484., WOS

***Príloha D* - Údaje o pedagogickej činnosti organizácie**

Semestrálne prednášky:

doc. Ing. Miroslav Boča, PhD.
Názov semestr. predmetu: Termodynamika kondenzovaných sústav
Počet hodín za semester: 26
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

prof. RNDr. Jozef Noga, DrSc.
Názov semestr. predmetu: Selected Topics in Computational Chemistry
Počet hodín za semester: 60
Názov katedry a vysokej školy: Uniwersytet Ślaski Katowice, Poľsko, Instytut Chemii

Semestrálne cvičenia:

Mgr. Peter Boháč
Názov semestr. predmetu: Laboratórne cvičenia zo všeobecnej a anorganickej chémie
Počet hodín za semester: 52
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

Ing. Michal Slaný
Názov semestr. predmetu: Cvičenia z anorganickej chémie
Počet hodín za semester: 40
Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Oddelenie anorganickej technológie (ÚATM FCHPT)

Semináre:

Mgr. Stanislav Kedžuch, PhD.
Názov semestr. predmetu: Výpočtový seminár II
Počet hodín za semester: 24
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

Mgr. Lukáš Petra
Názov semestr. predmetu: Chemické výpočty 1
Počet hodín za semester: 52
Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

Terénne cvičenia:

Individuálne prednášky:

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**
Belgicko	Anna Prnová	18				
Poľsko	Helena Pálková	12				
Počet vyslaní spolu	**2**	**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**
Česko	Jiří Hybler	7				
Čína					Zengjie Wang	41
Poľsko	Małgorzata Zimowska	14				
Rakúsko					Christina Atzenhofer	30
					Sabine Gschiel	7
Rusko					Igor Petrushenko, PhD	30
Počet prijatí spolu	**2**	**21**			**4**	**108**

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

Krajina	**Názov konferencie**	**Meno pracovníka**	**Počet dní**
Česko	297. Rozhovory	Ľubomír Smrčok	2
	Aplikácia materiálov	Viliam Pavlík	1
	COST	Stanislav Kedžuch	7
	ITSPAM	Miroslav Boča	2
		Eva Hadzimová	2
		Miroslav Hnatko	2
		Blanka Kubíková	2
		Zoltán Lenčéš	2
		Jarmila Mlynáriková	2
		Zuzana Netriová	2
		Viliam Pavlík	2
		František Šimko	2
	Multidisciplinary	Peter Cherry	4
		Oľga Malkin	4
		Vladimír Malkin	4
	NANOOSTRAVA	Juraj Bujdák	4
	PANALYTICAL	Anna Prnová	4
	Podzimní seminár Jílové společnosti	Peter Boháč	2
		Lukáš Petra	2
	STA	Eva Hadzimová	2
		Blanka Kubíková	2

	TERS, AFM	Mária Chromčíková	4
Čína	ICQC	Stanislav Kedžuch	16
		Jozef Noga	16
	MS10	Miroslav Boča	8
		Blanka Kubíková	8
Dánsko	OSOQ	Peter Cherry	5
		Oľga Malkin	5
		Vladimír Malkin	5
Francúzsko	deMon	Oľga Malkin	8
		Vladimír Malkin	8
Chorvátsko	ECM	Ľubomír Smrčok	9
India	FEST	Jozef Noga	7
	ICLA	Zoltán Lenčéš	7
	PANALYTICAL	Dušan Galusek	7
Kanada	CMCEE-11	Dušan Galusek	7
		Zoltán Lenčéš	6
		Pavol Šajgalík	6
Kórejská republika	ICP	Peter Boháč	11
		Adriana Czímerová	11
		Alexander Čeklovský	11
	IUPAC	Milan Drábik	9
	PACRIM11	Zoltán Lenčéš	10
		Pavol Šajgalík	6
Nemecko	DKGAM	Zoltán Lenčéš	3
	German-Chinese	Pavol Šajgalík	5
	PICO to FEMTO, BESSY	Miroslav Boča	4
		Ľubomír Smrčok	4
Poľsko	EuCheMS	Miroslav Boča	4
	PCS	Dušan Galusek	4
Rakúsko	MMQC	Oľga Malkin	6
		Vladimír Malkin	6
Slovinsko	CEEC-TA3	Anna Prnová	7
Španielsko	ECERS 2015	Roman Bystrický	6
		Dušan Galusek	6
		Ondrej Hanzel	6
		Zoltán Lenčéš	6
		Pavol Šajgalík	5
	ICMHN	Valéria Bizovská	6
		Adriana Czímerová	6
		Alexander Čeklovský	6
		Marián Matejdes	6
		Helena Pálková	6
Taiwan	ACTSEA	Dušan Galusek	6
		Pavol Šajgalík	6
Taliansko	ISFC	Martin Kontrík	7
		František Šimko	7
Thajsko	IMME	Eva Scholtzová	13
USA	EMN	Dušan Galusek	8
	Glass Problems	Peter Šimurka	6
	ICEACC	Zoltán Lenčéš	6
		Pavol Šajgalík	6
Veľká Británia	EUROCLAY	Valéria Bizovská	8
		Juraj Bujdák	8
		Peter Komadel	8
		Jana Madejová	8

		Helena Pálková	8
		Lukáš Petra	8
		Eva Scholtzová	8
Spolu	**38**	**79**	**469**

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

Skratky použité v tabuľke C:

297. Rozhovory - 297. Rozhovory o aktuálnych otázkach v rentgenovej a neutrónovej štruktúrnej analýze
ACTSEA - 5th International Symposium of Advanced Ceramics and Technology for Susatainable Energy Applications toward a Low Carbon Society
Aplikácia materiálov - „Aplikácia materiálov v praxi“
CEEC-TA3 - 3rd Central and Eastern European Conference on Thermal Analysis and Calorimetry
CMCEE-11 - 11th International Symposium Ceramic Materials and Components for Energy and Environmental Applications
COST - COST Action our Astrochemical
deMon - deMon-2k and deMon-nano tutorial
DKGAM - 90th Deutsche Keramische Gesellschaft Annual Meeting
ECERS 2015 - Účasť na konferencii: 14th International Conference of the European Ceramic Society
ECERS 2015 - 14th International Conference of the European Ceramic Society
ECM - 29th European Crystallographic Meeting
EMN - Energy Materials Nanotechnology 2015
EuCheMS - 3th Inorganic Conference: European Chemical Sciences
EUROCLAY - International conference on clay science and technology: EUROCLAY 2015
FEST - "Frontiers in Electronic Structure Theory"
German-Chinese - German-Chinese Workshop "Preparation and application of ultra-high temperature ceramic matrix composites"
Glass Problems - 76th Conference on Glass Problems
ICEACC - 39th International Conference and Exposition on Advanced Ceramics and Composites
ICLA - "5th International Conference on Luminescence and its Applications"
ICMHN - Fourth International Conference on Multifunctional Hybrid and Nanomaterials (Hybrid Materials 2015)
ICP - 27th International Conference on Photochemistry
ICQC - 15th International Congress of Quantum Chemistry
IMME - "International Conference on Intelligent Materials and Manufacturing Engineering"
ISFC - 21 ISFC and IsoFT´15
ITSPAM - Intrakce tavenin s pregresívnymi anorganickými materiály
ITSPAM - Intrakce tavenin s pregresívnymi anorganickými materiály
IUPAC - World Chemistry Congress IUPAC
MMQC - VIIth Workshop on Modern Methods in Quantum Chemistry
MS10 - Molten Salts Chemistry and Technology
Multidisciplinary - Multidisciplinary Workshop 3
NANOOSTRAVA - 4th Nanomaterials and NanotechnologyMeeting
OSOQ - Open Shells. Open Questions
PACRIM11 - 11th Pacific Rim Conference of Ceramic Society
PANALYTICAL - Seminár: PANALYTICAL
PANALYTICAL - PANALYTICAL EUROPEAN XRD DAYS, Seminar on Advanced X-ray Diffraction Techniques and Applications
PCS - Xth Conference of the Polish Ceramic Society
PICO to FEMTO, BESSY - Workshop: "From PICO to FEMTO - Time-resolved studies at BESSY II"
Podzimní seminár Jílové společnosti - Podzimní seminár Jílové společnosti
STA - Simultaneous Thermal Analysis
TERS, AFM - Workshope:"TERS and co-localized AFM Raman".