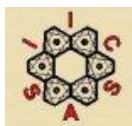


Ústav anorganickej chémie SAV



Správa o činnosti organizácie SAV za rok 2009

Bratislava
január 2010

Obsah osnovy Správy o činnosti organizácie SAV za rok 2009

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1. Základné údaje o organizácii

1.1. Kontaktné údaje

Názov: Ústav anorganickej chémie SAV
Riaditeľ: prof. RNDr. Pavol Šajgalík, DrSc.
Zástupca riaditeľa: Ing. Miroslav Boča, PhD.
Vedecký tajomník: RNDr. Jana Madejová, DrSc.
Predseda vedeckej rady: RNDr. Peter Komadel, DrSc.
Adresa: Dúbravská cesta 9, 845 36 Bratislava 45
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Tel.: 02/59410401
 Fax: 02/59410444
 E-mail: uachsekr@savba.sk

Názvy a adresy detašovaných pracovísk:

- Vitrum Laugaricio – Centrum kompetencie skla, spoločné pracovisko ÚACH SAV, Trenčianskej univerzity A. Dubčeka, Fakulty chemickej a potravinárskej technológie STU a RONA, a.s.**
 Študentská 2, 911 50 Trenčín

Vedúci detašovaných pracovísk:

- Vitrum Laugaricio – Centrum kompetencie skla, spoločné pracovisko ÚACH SAV, Trenčianskej univerzity A. Dubčeka, Fakulty chemickej a potravinárskej technológie STU a RONA, a.s.**
 doc. Ing. Dušan Galusek, PhD.

Typ organizácie: Rozpočtová od roku 1953

1.2. Údaje o zamestnancoch

Tabuľka 1a Počet a štruktúra zamestnancov

Štruktúra zamestnancov	K	K do 35 rokov		K ved. prac.		F	P	T
		M	Ž	M	Ž			
Celkový počet zamestnancov	79	13	14			67	65,74	53,99
Vedeckí pracovníci	53	13	10	36	17	43	40,67	40,67
Odborní pracovníci VŠ	9	0	1			8	9,23	7,73
Odborní pracovníci ÚS	14	0	3			13	12,83	5,58
Ostatní pracovníci	3	0	0			3	3	0

K – kmeňový stav zamestnancov v pracovnom pomere k 31.12.2009 (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 31.12.2009 (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 31.12.2009)

Rodová skladba	Pracovníci s hodnosťou				Vedeckí pracovníci v stupňoch		
	DrSc.	CSc./PhD.	prof.	doc.	I.	IIa.	IIb.
Muži	5	31	3	4	5	11	20
Ženy	2	15	0	0	2	1	14

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

Veková štruktúra (roky)	< 30	31-34	35-39	40-44	45-49	50-54	55-59	60-64	> 65
Muži	6	2	6	3	0	5	8	2	1
Ženy	4	2	3	3	0	4	2	2	1

Tabuľka 1d Priemerný vek zamestnancov organizácie k 31.12.2009

	Kmeňoví zamestnanci	Vedeckí pracovníci	Riešitelia projektov
Muži	44,8	42,6	45,1
Ženy	42,6	35,5	44,2
Spolu	43,8	40,3	44,8

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

Podstatná zmena nastala v štruktúre riadenia financií na ÚACH SAV. Ústav je nositeľom dvoch Centier excelentnosti financovaných z prostriedkov ŠF EÚ v celkovom objeme prostriedkov 3, 983 mil €, je partnerom Technologického inštitútu SAV v ďalších dvoch schválených projektoch. Ďalšie dva projekty sú v procese hodnotenia. Objem prostriedkov administrovaný v projektoch ŠF EÚ je v súčasnosti viac než trojnásobne vyšší ako ročný obrat finančných prostriedkov na ÚACH a je reálny predpoklad, že sa ešte zvýši. Z toho vyplýva aj naliehavá potreba rozšírenia administratívy ústavu. Keďže prostriedky plynúce z Agentúry pre ŠF EÚ (AŠFEU) podliehajú schváleniu monitorovacích správ (čo je proces administratívne a časovo viac než náročný), nových pracovníkov napomáhajúcich administrovanie projektov hradí ústav z vlastných zdrojov. Zvyšovanie počtu administratívnych pracovníkov je momentálne možné len tak, že ich mzdy sú vyplácané na úkor tých, ktorí sú na zahraničných stážach a pobytoch, resp. na materských dovolenkách. V roku 2009 tieto náklady predstavovali 2300 € mesačne bez odvodov. Navyše, administrácia projektov a príprava nových je tiež nákladný proces. Finančné prostriedky na neúmerne množstvo notársky overených tlačív, poštových služieb, ktoré AŠFEU vyžaduje boli v roku 2009 vyčíslené na 842 €. Konzultačné služby pri podávaní projektov predstavovali náklad

3950 € a spotrebný materiál (papier, tonery a pod.) 300 €. Pri príspevku z P SAV na bežné prostriedky a služby vo výške 49 959 €, táto položka znamenala významný zásah do chodu ústavu. V konečnom dôsledku celkové náklady v roku 2009 na zabezpečenie účasti v projektoch ŠF pre ústav predstavovali 5092 € bežných neinvestičných prostriedkov a mzdové náklady na 2 pracovníkov. P SAV by sa malo zaoberať touto situáciou a zvážiť refundáciu (aspoň časti) týchto prostriedkom úspešným žiadateľom.

Priemerný vek zamestnancov ÚACH SAV sa dlhodobo nemení a je pod hranicou 45 rokov. Udržanie tohto trendu kladie nároky na personálnu politiku 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, Ib a Ia), je to jediný prostriedok pre zvyšovanie vedeckej výkonnosti organizácie. Zvyšovanie kvalifikácie vedeckých pracovníkov má logicky za následok zvýšený tlak na mzdový fond. **Preto vedenie ústavu oceňuje aktivitu P SAV pri zohľadňovaní zvyšovania kvalifikačnej štruktúry (najmä mladých vedeckých pracovníkov) vo vzťahu k mzdovému fondu.** Veríme, že táto iniciatíva bude realizovaná už v roku 2010, keďže bola odsúhlasená Snemom SAV pri schvaľovaní Zásad tvorby rozpočtu SAV na rok 2010.

2. Vedecká činnosť

2.1. Domáce projekty

Tabuľka 2a Zoznam domácich projektov riešených v roku 2009

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2009 (v €)		
	A	B	A		B
			spolu	pre organizáciu	
1. Vedecké projekty, ktoré boli r. 2009 financované VEGA	10	0	80722	80722	-
2. Projekty, ktoré boli r. 2009 financované APVV	15	5	313957	201743	71599
3. Projekty OP ŠF	1	1	412514	334985	-
4. Projekty FM EHP	0	0	-	-	-
5. Projekty riešené v rámci ŠPVV	0	0	-	-	-
6. Projekty centier excelentnosti SAV	1	1	19832	19832	4846
7. Vedecko-technické projekty, ktoré boli v roku 2009 financované	0	0	-	-	-
8. Projekty podporované Európskym sociálnym fondom	0	0	-	-	-
9. Podpora medzinárodnej spolupráce z národných zdrojov (MVTs, APVV,...)	0	0	-	-	-
10. Iné projekty (ústavné, na objednávku rezortov a pod.)	1	0	5598	5598	-

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

Tabuľka 2b Zoznam domácich projektov podaných v roku 2009

Štruktúra projektov	Miesto podania	Organizácia je nositeľom projektu	Organizácia sa zmluvne podieľa na riešení projektu
1. Účasť na nových výzvach APVV r. 2009	-	9	
2. Projekty výziev OP ŠF podané r. 2009	Bratislava	1	2
	Regióny	2	2
3. Projekty výziev FM EHP podané r. 2009	-		

Výzvy APVV: v 2009 podaných 11 LPP projektov, z toho 9 financovaných

Projekty výziev OP ŠF, podané v r. 2009

Operačný program a názov projektu: OPVaV-2009/4.1/02-SORO: Centrum pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach II

Kód projektu: ITMS kód: 26240120021

Podávateľ projektu: ÚACH SAV

Partneri: ÚP SAV, CHÚ SAV, STU-FCHPT

Stav projektu: podpísaná zmluva, začiatok riešenia 04/2010

Operačný program a názov projektu: OPVaV-2009/2.1/03-SORO: Centrum excelentnosti pre keramiku, sklo a silikátové materiály

Kód projektu: kód žiadosti NFP26220120128

Podávateľ projektu: ÚACH SAV

Partneri: ÚMV SAV, TnU AD

Stav projektu: projekt je podaný

Operačný program a názov projektu: OPVaV-2009/2.2/03-SORO: Priemyselný výskum pre potreby zefektívnenia unikátnej technológie tavenia a tvarovania úžitkového skla

Kód projektu: NFP 26220220174

Podávateľ projektu: RONA a.s. Lednické Rovne

Partneri: ÚACH SAV

Stav projektu: projekt je schválený na financovanie

Operačný program a názov projektu: OPVaV-2009/2.2/03-SORO: Znalostná databáza a expertný systém enviromentálneho riešenia havárií straty chladiva v prevádzke jadrovej elektrárne

Kód projektu: NFP 26220220136

Podávateľ projektu: VÚEZ a.s. Levice

Partneri: ÚACH SAV

Stav projektu: projekt je schválený na financovanie

Operačný program a názov projektu: OPVaV-2009/4.2/02-SORO: Efektívne riadenie výroby a spotreby energie z obnoviteľných zdrojov

Kód projektu: identifikátor žiadosti: 283668

Podávateľ projektu: Technologický inštitút SAV

Partneri: ÚACH SAV, EIÚ SAV, FÚ SAV, ÚMMS SAV, STU

Stav projektu: projekt je schválený na financovanie

Operačný program a názov projektu: OP Konkurencieschopnosť a hospodársky rast: Výskum technológie a vlastností pórobetónu na báze druhotných surovín

Podávateľ projektu: PORFIX-pórobetón, a.s.

Stav projektu: projekt je schválený, začiatok riešenia 1. štvrťrok 2010

Operačný program a názov projektu: OPVaV-2008/2.2/01-SORO: Centrum pre aplikovaný výskum a transfer poznatkov do praxe v priemysle skla a keramiky

Kód projektu: NFP 26220220049

Podávateľ projektu: ÚACH SAV

Partneri: TnU AD

Stav projektu: projekt bol zamietnutý

2.2. Medzinárodné projekty

2.2.1. Medzinárodné projekty riešené v roku 2009

Tabuľka 2c Zoznam medzinárodných projektov riešených v roku 2009

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2009 (v €)		
	A	B	A		B
			spolu	pre organizáciu	
1. Projekty 6. rámcového programu EÚ (neuvádzať projekty ukončené pred r. 2009)	0	1	-	-	38463
2. Projekty 7. rámcového programu EÚ	0	0	-	-	-
3. Multilaterálne projekty v rámci vedeckých programov COST, INTAS, EUREKA, ESPIRIT, PHARE, NATO, UNESCO, CERN, IAEA, ESF (European Science Foundation) a iné	1	0	1500	1500	-
4. Projekty v rámci medzivládnych dohôd o vedecko-technickej spolupráci (Grécko, ČR, Nemecko a iné)	0	0	-	-	-
5. Bilaterálne projekty	5	0	1073	1073	-
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 podané v roku 2009

Tabuľka 2d Podané projekty 7. RP EÚ v roku 2009

	A	B
Počet podaných projektov v 7. RP EÚ	0	5

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

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

Lubomír Hric

V rámci výzvy: FP7-PEOPLE-2009-IEF

Názov projektu: Preparation of high temperature ceramic composite – "HITCOM"

V spolupráci: Austrian Institute of Technology – AIT

Dátum podania: projekt podaný 18. 8. 2009, schvaľovací proces neukončený

Prof. RNDr. Pavol Šajgalík, DrSc.

V rámci výzvy: Marie Curie Initial Training Networks (ITN) FP7-PEOPLE-2010-ITN

Názov projektu: Functional nitrides for energy applications – FUNEA

V spolupráci: TU Darmstadt (coordinator), Technische Universität Darmstadt, Fachbereich Material- und Geowissenschaften, Prof. Dr. Ralf Riedel, Germany

Dátum podania projektu: do 22. 12. 2009 (podané)

Zoltán Lenčes

V rámci výzvy: FP7-SPACE-2010-1

Názov projektu: Development of a morphing UHTC leading edge for re-entry vehicles equipped with a Structural Health Monitoring System

V spolupráci: S.A.B AEROSPACE SrL., Italy

Dátum podania: projekt podaný 7. 12. 2009, schvaľovací proces neukončený

Milan Drábik

V rámci výzvy: FP7-SME-2010-1

Názov projektu: Low Impact Cellular Building Products Utilising New Generation Fuel Ashes

V spolupráci: Prof. Pal Mangat, Sheffield Hallam University, UK

Vladimír Malkin

V rámci výzvy: FP7-PEOPLE-2010-ITN

Názov projektu: Pushing the Envelope of Nuclear Magnetic Resonance Spectroscopy for Paramagnetic Systems. A Combined Experimental and Theoretical Approach

V spolupráci: Centre de RMN à Très Hauts Champs, CNRS, France, Dr. Guido Pintacuda

Dátum podania: 22. 12. 2009, projekt je podaný

2.3. Najvýznamnejšie výsledky vedeckej práce

2.3.1. Základný výskum

Názov: *Využitie spektroskopie v blízkej IČ oblasti pri výskume ílových minerálov a ich modifikácií*

Spektroskopia v blízkej infračervenej (IČ) oblasti sa využila pri výskume ílových minerálov modifikovaných anorganickou kyselinou a alkylamónnymi kationmi. Po prvý raz sa systematicky analyzovali a interpretovali pásy overtónov a kombinačných vibrácií OH a CH skupín prítomných v

reflexných spektrách modifikovaných ílových minerálov. Ukázalo sa, že táto metóda poskytuje nové informácie, ktoré nie je možné získať pomocou tradične využívanej IČ spektroskopie v strednej oblasti. V prípade kyselinovo-modifikovaných ílových minerálov je to identifikácia terminálnych (Si-OH) a geminálnych (HO-Si-OH) silanolových skupín, ktoré dokumentujú acidifikáciu ich povrchu a stupeň ich rozkladu. Zmena intenzít pásov overtónov a kombinačných vibrácií kyselinovo-modifikovaných organoílov ukázala, že prítomnosť alkylamónnych katiónov znižuje rýchlosť rozpúšťania, pričom dôležitá je veľkosť organického katiónu. Katióny s dlhým alkylovým reťazcom pokrývajú vonkajší aj vnútorný povrch častíc a tým bránia prístupu protónov k povrchu častíc ílového minerálu.

Financovanie: VEGA-2/0183/09, APVV-050505, APVV-VVCE-33-07

Publikácie:

- J. Madejová, M. Pentrák, H. Pálková, P. Komadel: Near-infrared spectroscopy: a powerful tool in studies of acid-treated clay minerals. *Vibrational Spectroscopy* 49, 211-218, 2009
- J. Madejová, H. Pálková, M. Pentrák, P. Komadel: Near-infrared spectroscopic analysis of acid-treated organoclays. *Clays and Clay Minerals*, 57, 311-322, 2009
- M. Pentrák, J. Madejová, P. Komadel: Acid and alkali treatment of kaolins. *Clay Minerals*, 44, 507-519, 2009
- J. Madejová, E. Balan, S. Petit: Application of vibrational spectroscopy to the characterization of phyllosilicates and other industrial minerals. In G. Christidis (editor) *EMU notes in mineralogy*. Industrial Mineralogy. In press.

2.3.2. Aplikačný typ

Názov: *Progresívne keramické materiály foto-termicko-mechanickej konverznej sústavy solárneho tepelného motora na báze parného cyklu*

Boli vyvinuté dve telesá absorbéra pre solárny motor stirlingovho typu. Teleso absorbéra je vyrobené z keramiky na báze Si_3N_4 . Pri riešení projektu bolo potrebné navrhnuť optickú geometriu keramického absorbéra tak, aby vyhovovala požiadavkám potrebných pre jeho optimálnu funkčnosť. Svetelnosť pre kolmé lúče bola požadovaná 50% alebo technicky max. dosiahnuteľná a zároveň tvar by mal mať maximálnu aktívnu plochu. Výsledkom prác je konečný tvar telesa absorbéra s počtom otvorov 485 s priemerom 2 mm a 27 s priemerom 6 mm, čo predstavuje priamu svetelnosť 36%. Na ÚACH SAV boli pripravené keramické telesá, ktoré vyhoveli požadovaným fyzikálno-chemickým vlastnostiam. Mikroštruktúra telesa absorbéra a jeho chemické zloženie zabezpečili dostatočnú chemickú odolnosť voči prehriatej pare, dostatočnú pevnosť a odolnosť proti tepelným šokom, ako aj optimálnu pórovitosť zabezpečujúcu rýchle odparenie vody potrebnej pre pohyb piestu motora.

Spoluriešiteľské organizácie:

Katedra experimentálnej elektrotechniky, Elektrotechnická fakulta Žilinskej univerzity, Liptovský Mikuláš a GoldenSUN Slovakia, s.r.o., Liptovský Mikuláš

Financovanie: APVV-0448-06

Doba riešenia projektu: 01/2007 – 12/2009

Publikácie:

- T. Plachký, Z. Lenčoš, Ľ. Hric, P. Šajgalík, P. Baláž, R. Riedel, H.J. Kleebe: Processing and mechanical properties of Si_3N_4 composites employing polymer-derived SiAlOC as sintering aid, *J. Eur. Ceram. Soc.*, 30 (2010) 759-767.
- T. Plachký, J. Křesťan, M. Korenko, V. Medri, Z. Lenčoš, P. Šajgalík: Corrosion and oxidation behavior of b-SiAlON ceramics via different processing routes, *Journal of the Ceramic Society of Japan*, 117 [4] (2009) 482-488.
- P. Šajgalík, *Tecnología Cerámica Para Energías Alternativas*, Cerámica Y Cristal, 142 Agosto (2009) 30-31.
- L. Kipsová, Z. Lenčoš, P. Šajgalík, Y. Zhou, K. Hirao: Keramické kompozity na báze nitridu kremičitého s vysokou tepelnou vodivosťou. Zborník odborného seminára ALER, 5. ročník, Liptovský Mikuláš, 8. - 9. 10. 2009, str. 83-94.
- Z. Lenčoš, T. Plachký, Ľ. Benco, P. Šajgalík, Y. Zhou, K. Hirao, M. Žitňan, D. Velič: Keramické luminofory na báze nitridov. Zborník odborného seminára ALER, 5. ročník, Liptovský Mikuláš, 8. - 9. 10. 2009, str. 95-104.
- J. Dusza, P. Šajgalík: Silicon Nitride and Alumina Based Nanocomposites, in *Handbook of Nanoceramics and Their Based Nanodevices*, Volume 2, T.-Y. Tseng and H. S. Nalwa eds., American Scientific Publishers 2009, pp. 253-283.

2.3.3. Medzinárodné vedecké projekty

Názov: *Transparentný pancier so zvýšenou balistickou odolnosťou*

Autorský kolektív zo SAV: D. Galusek, P. Švančárek, K. Ghillányová, M. Micháľková, J. Sedláček, Z. Lenčoš, P. Šajgalík.

V rámci projektu NATO Science for Peace and Security koordinovaného ÚACH SAV vyvinul projektový tím pozostávajúci z partnerov z Českej republiky (Saint Gobain Advanced Ceramics Turnov), Ruskej federácie (Ioffeho fyzikálno-technický inštitút St. Petersburg) a Ukrajiny (Inštitút monokryštálov Charkov) nový typ transparentného panciera so zvýšenou mierou balistickej ochrany. Hlavný problém riešený v rámci projektu bol vývoj praktického materiálového, technologického a konštrukčného riešenia pre novú generáciu vrstvených transparentných pancierových systémov so zníženou hmotnosťou a so zvýšenou mierou ochrany voči malokalibrovej protipancierovej munícii (7,62 x 51 AP) porovnateľnou so súčasnými hrubými ochranami z vrstveného spevneného skla pri súčasnom výraznom znížení hrúbky a hmotnosti. Výsledkom je riešenie vo forme vrstveného pancierového systému s ultra tvrdou impaktnou vrstvou z monokryštálického zafíru a s celkovou hrúbkou 60 mm, ktorá poskytuje rovnakú úroveň balistickej ochrany ako vrstvený sklený pancier s hrúbkou 120 až 140 mm. Pancier bol úspešne otestovaný na certifikovanej strelnici v Slavičine, ČR a získal certifikát na úroveň ochrany 3 podľa medzinárodného štandardu STANAG 4569.

Projekt: NATO SfP 981770 Light weight and transparent armours

Doba riešenia projektu: 04/2006 – 03/2009

2.3.4. Zámery na čerpanie štrukturálnych fondov EÚ v ďalších výzvach

Ústav anorganickej chémie sa plánuje zapojiť do nasledujúcich výziev ŠF EÚ:

OP VaV, Opatrenie: 3.1 Obnova a budovanie technickej infraštruktúry výskumu a vývoja v Bratislavskom kraji

Plánovaný termín vyhlásenia výzvy: jún 2010

OP VaV-2009/2.2/04-SORO: Opatrenie 2.2: Prenos poznatkov a technológií získaných výskumom a vývojom do praxe

Dátum vyhlásenia výzvy: 30. 10. 2009

Dátum uzávierky výzvy: 08. 02. 2010

2.4. Publikačná činnosť (zoznam je uvedený v prílohe C)**Tabuľka 2e** Štatistika vybraných kategórií publikácií

PUBLIKAČNÁ A EDIČNÁ ČINNOSŤ	Počet v r. 2009/ doplňky z r. 2008
1. Vedecké monografie vydané v domácich vydavateľstvách (AAB, ABB, CAB)	0 / 0
2. Vedecké monografie vydané v zahraničných vydavateľstvách (AAA, ABA, CAA)	0 / 0
3. Odborné monografie, vysokoškolské učebnice a učebné texty vydané v domácich vydavateľstvách (BAB, ACB)	0 / 0
4. Odborné monografie a vysokoškolské učebnice a učebné texty vydané v zahraničných vydavateľstvách (BAA, ACA)	0 / 0
5. Kapitoly vo vedeckých monografiách vydaných v domácich vydavateľstvách (ABD, ACD)	0 / 0
6. Kapitoly vo vedeckých monografiách vydaných v zahraničných vydavateľstvách (ABC, ACC)	3 / 0
7. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v domácich vydavateľstvách (BBB, ACD)	0 / 0
8. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v zahraničných vydavateľstvách (BBA, ACC)	0 / 0
9. Vedecké a odborné práce v časopisoch evidovaných v Current Contents (ADC, ADCA, ADCB, ADD, ADDA, ADDB, CDC, CDCA, CDCB, CDD, CDDA, Cddb, BDC, BDCA, BDCB, BDD, BDCA, Bddb)	51 / 0
10. Vedecké a odborné práce v nekarentovaných časopisoch (ADE, ADEA, ADEB, ADF, ADFA, ADFB, CDE, CDEA, CDEB, CDF, CDFA, CDFB, BDE, BDEA, BDEB, BDF, BDFA, BDFB)	7 / 1
11. Vedecké a odborné práce v zborníkoch (konferenčných aj nekonferenčných, vydaných tlačou alebo na CD)	
a/ recenzovaných (AEC, AED, AFA, AFB, AFBA, AFBB, BEC, BED, CEC, CED)	16 / 0
b/ nerecenzovaných (AEE, AEF, AFC, AFD, AFDA, AFDB, BEE, BEF)	13 / 0
12. Vydané periodiká evidované v Current Contents	0
13. Ostatné vydané periodiká	0
14. Vydané alebo editované zborníky z vedeckých podujatí (FAI)	1/0
15. Vedecké práce uverejnené na internete (GHG)	0 / 0
16. Preklady vedeckých a odborných textov (EAJ)	0 / 0

Tabuľka 2f Ohlasy

OHLASY	Počet v r. 2008	Doplnky za r. 2007
Citácie vo WOS (1.1, 2.1)	1018	1
Citácie v SCOPUS (1.2, 2.2)	46	0
Citácie v iných citačných indexoch a databázach (9, 10)	0	0
Citácie v publikáciách neregistrovaných v citačných indexoch (3, 4)	2	0
Recenzie na práce autorov z organizácie (5, 6, 7, 8)	0	0

2.5. Aktívna účasť na vedeckých podujatiach**Tabuľka 2g** Konferencie

Prednášky a vývesky na medzinárodných vedeckých podujatiach	68
Prednášky a vývesky na domácich vedeckých podujatiach	5

2.6. Vyžiadané prednášky**2.6.1. Vyžiadané prednášky na medzinárodných konferenciách**

BOČA, Miroslav: Columbic interactions in high temperature molten salts. Second Humboldt Conference on Noncovalent Interactions. Vršac, Serbia, 22. – 25. október 2009

GALUSEK, Dušan: Bulk alumina-based ceramic nanomaterials. 11th International Conference and Exhibition of the European Ceramics Society. Krakow, Poland, 21. – 25. jún 2009

KOMADEL, Peter: Chemical application of clays. Groupe Français des Argiles annual meeting, Toulouse, Francúzsko, 14. – 16. 4. 2009

KOMADEL, Peter: Identification and characterization of interstratified minerals with spectroscopic and other classical methods. AIPEA School for Young Scientists Interstratified Clay Minerals, University of Bari, Taliansko, 12. – 13. 6.2009

KOMADEL, Peter: Chemical modifications of smectites seen by selected spectroscopic techniques. Clays, clay minerals and layered materials-2009, Zvenigorod, Rusko, 21. – 25. 9. 2009

MALKIN, Vladimír: Fully relativistic calculations of NMR and EPR parameters in the framework of the matrix Dirac-Kohn-Sham equation. In: The 3rd Japan-Czech-Slovak symposium on Theoretical and Computational Chemistry. Bratislava, Slovensko, 2009

MALKIN, Vladimír: Relativistic four-component calculations of NMR and EPR parameters. In: Central European Symposium on Theoretical Chemistry. Dobogókő, Maďarsko, 2009

MALKIN, Oľga: Interpretation of NMR spin-spin couplings: methodology and examples. In: Central European NMR Meeting. Valtice, Česká Republika, 2009

MALKIN, Oľga: Analysis of indirect nuclear spin-spin coupling constants using localized molecular orbitals. In: EAST NMR meeting, Bratislava, Slovak Republic, 2009

Jozef Noga and Ján Šimunek: Hartree-Fock Via Coupled Cluster Theory – A Way to Diagonalization Free Algorithm. 7th International Conference of Computational Methods in Sciences and Engineering, Hotel Rodos Palace, Rhodes, Greece, 29. september – 4. október 2009
Príspevok bude publikovaný ako ucelená vedecká štúdia v sérii American Institute of Physics Conference Proceedings v r. 2010

Jozef Noga: H₂O-H₂ interaction: An Interplay of Supercomputers and Grids, GCCP2009, 5th International Workshop on Grid Computing for Complex Problems, Bratislava, 26.10. – 28.10. 2009

ŠAJGALÍK, Pavol: SiC/Si₃N₄ Nano/Micro Composites - Processing and Mechanical properties. In:

33rd International Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, Florida, USA, 18. – 23. 1. 2009

ŠAJGALÍK, Pavol: SiC/Si₃N₄ nano/micro composites - materials with excellent properties. 6th International Conference on Nitrides and Related Materials, Karlsruhe, Germany, 15. – 18. 3. 2009

ŠAJGALÍK, Pavol: Sliding and Abrasive Wear of Graphite/Silicon Nitride based Composites, 11th International Conference and Exhibition of ECERS, Krakow, Poland, 21. – 25. 6. 2009

ŠAJGALÍK, Pavol - LENČEŠ, Zoltán: Synthesis and luminescent properties of Eu doped MgSiN₂ and LaSi₃N₅, International Symposium on Advanced Ceramics and Technology for Sustainable Energy Applications, Taipei, Taiwan, 1. – 4. 11. 2009

2.6.2. Vyžiadané prednášky na domácich konferenciách

2.6.3. Vyžiadané prednášky na významných vedeckých inštitúciách

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

ŠAJGALÍK, Pavol: SiC/Si₃N₄ nano/micro composites - materials with excellent properties, EMPA, Zurich, Switzerland, Apríl 2009

BUJDÁK, Juraj: Phenomena in the Systems of Layered Silicates and Organic Dyes: Aggregation and Energy Transfer. Workshop on Anisotropic Fluorescent Thin Films Based on Organic Dyes Embedded in Layered Inorganics. Nagoya University, Furo-Cho, Chikusa-ku, Nagoya, Japonsko, 05. 06. 2009

CZÍMEROVÁ, Adriana: Energy Transfer Process in the Films of Polymer/Clay/Laser Dye prepared by the LDL method. Workshop on Anisotropic Fluorescent Thin Films Based on Organic Dyes Embedded in Layered Inorganics." Nagoya University, Furo-Cho, Chikusa-ku, Nagoya, Japonsko, 05. 06. 2009

KOMADEL Peter: Redukcia a reoxidácia nontronitu. Ako sa dosiahla maximálna redukcia v rokoch 1986-87. VŠB TU Ostrava, 26. 11. 2009

MADEJOVÁ Jana: Charakterizácia prírodných a modifikovaných ílových nanomateriálov pomocou IČ spektroskopie. VŠB TU Ostrava, 26. 11. 2009

2.7. Patentová a licenčná činnosť na Slovensku a v zahraničí v roku 2009

2.7.1. Vynálezy, na ktoré bol udelený patent

Na Slovensku - počet patentov: 1

Číslo PV: 287118

Mená autorov: Lenčes Zoltán, Sedláček Jaroslav, Šajgalík Pavol

Názov vynálezu: Spôsob výroby hutnej keramiky na báze karbidu kremíka

Majiteľ / spolumajiteľ: Ústav anorganickej chémie SAV

2.7.2. Prihlásené vynálezy

2.7.3. Predané licencie

2.7.4. Realizované patenty

Finančný prínos pre organizáciu SAV v roku 2009 a súčet za predošlé roky sa neuvádzajú, ak je zverejnenie v rozpore so zmluvou súvisiacou s realizáciou patentu.

2.8. Iné informácie k vedeckej činnosti.

Ku koncu roku 2009 bol ústav koordinátorom dvoch projektov ŠF: Centrum pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach – MACHINA, a Projektu MACHINA – II. Etapa. Ústav participuje ako partner na ďalších dvoch projektoch koordinovaných Technologickým inštitútom SAV: Efektívne riadenie výroby a spotreby energie z obnoviteľných zdrojov a Centrum komercializácie poznatkov a ochrany duševného vlastníctva Slovenskej akadémie vied. Projekt Výskum technológie a vlastností pórobetónu na báze druhotných surovín je schválený tiež. Ďalšie projekty sú v procese schvaľovania a iné sú v štádiu prípravy. Vzhľadom na náročnosť procesov projektom ŠF sa venujú najlepší vedeckí pracovníci ústavu. Kapacita týchto pracovníkov je limitovaná, v súčasnosti ju takmer úplne venujú príprave, riešeniu a riadeniu projektov ŠF. Ako logický dôsledok tohto stavu očakávame výrazný pokles v publikačnej aktivite ústavu ako celku v nasledujúcich rokoch. Situácia je hraničná. Ústav bez výraznej obnovy prístrojovej infraštruktúry nie je schopný udržať vysokú úroveň výskumu, na druhej strane komplikovanosť hraničiaca s absurditou pri získavaní prostriedkov na prístrojovú infraštruktúru decimuje vedeckú aktivitu pracovníkov ústavu do takej miery, že sa začína prejavovať v zníženej produkcii a získavaní vedeckých projektov.

Publikačná aktivita pracovníkov v posledných rokoch mierne klesá. Počet karentovaných publikácií v tomto roku dosiahol číslo 51, čo pri počte 40,67 vedeckých pracovníkov (prepočítaný stav, podľa Tabuľky 1a) znamená 1,3 karentovanej publikácie na vedeckého pracovníka. Tento relatívne nízky počet je aj výsledkom prehodnotenia tvorby databáz a kategorizácie časopisov (napr. špeciálnych vydaní časopisov venovaných príspevkom z významných konferencií). Cieľom naďalej ostáva dosiahnuť dve publikácie na vedeckého pracovníka, ktorý zodpovedá štandardu vyspelých vedeckých pracovísk s podobným zameraním. Priemerný impakt faktor časopisov, v ktorých boli práce uverejnené, bol 1,56. Citovanosť (vo všetkých dostupných databázach WOK – 1018, SCOPUS – 46) na vedeckého pracovníka (prepočítaný stav) je 26,1 citácie. Potešiteľný je trvalý trend rastu počtu citácií a ich získavanie pracovníkmi všetkých oddelení ústavu.

Relatívne vysoké renomé pracovníkov ústavu vo svetovej vedeckej komunite dokumentuje aj vysoký počet vyžiadaných prednášok pracovníkov ústavu na medzinárodných vedeckých podujatiach, ktorých bolo 15 v roku 2009, viaceré z nich odznali 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 2009

Forma	Počet k 31.12.2009				Počet ukončených doktorantúr v r. 2009					
	Doktorandi								Ukončenie z dôvodov	
	celkový počet		z toho novoprijatí		úspešnou obhajobou		uplynutím času určeného na štúdium	neobhájením dizertačnej práce alebo neudelením vedeckej hodnosti	rodinných, zdravotných a iných, resp. bez udania dôvodu	nevykonania odbornej skúšky
	M	Ž	M	Ž	M	Ž				
Denná	4	3	3	2	1	2	0	0	0	0
Externá	0	2	0	0	1	0	0	0	0	0
Spolu	4	5	3	2	2	2	0	0	0	0

3.2. Zmena formy doktorandského štúdia

Tabuľka 3b Preradenie z dennej formy na externú a z externej formy na dennú

	Počet
Preradenie z dennej formy na externú	
Preradenie z externej formy na dennú	

3.3. Zoznam doktorandov, ktorí ukončili doktorandské štúdium úspešnou obhajobou

Tabuľka 3c Menný zoznam ukončených doktorandov v roku 2009

Meno doktoranda	Forma DŠ	Mesiac, rok nástupu na DŠ	Mesiac, rok obhajoby	Číslo a názov vedného odboru	Meno a organizácia školiteľa	Fakulta udeľujúca vedeckú hodnosť
*Alexander Čeklovský	Interné štúdium hradené z prostried. SAV	09 / 2004	05 / 2009	14-01-9 anorganická chémia	Juraj Bujdák, RNDr. PhD., Ústav anorganickej chémie	Prírodovedecká fakulta UK
Linda Kipsová	Interné štúdium hradené z prostried. SAV	10 / 2006	09 / 2009	5.2.19, anorganické technológie a materiály	Zoltán Lenčéš, Ing. PhD., Ústav anorganickej chémie	Fakulta chemickej a potravinárskej technológie STU
Stanislav Komorovský	Interné štúdium hradené z prostried. SAV	10 / 2005	08 / 2009	4.1.11, chemická fyzika	Vladimír Malkin, DrSc., Ústav anorganickej chémie	Prírodovedecká fakulta UK

*Štefánia Lojanová	Interné štúdium hradené z prostried. SAV	09 / 2004	06 / 2009	5.2.19, anorganické technológie a materiály	Pavol Šajgalík, prof. RNDr. DrSc., Ústav anorganickej chémie	Fakulta chemickej a potravinárskej technológie STU
Monika Mikoczyová Micháľková	Interné štúdium hradené z prostried. d. SAV	10 / 2006	09 / 2009	5.2.19, anorganické technológie a materiály	Dušan Galusek, doc. PhD., Ústav anorganickej chémie	Fakulta chemickej a potravinárskej technológie STU
Tomáš Plachký	Externé štúdium	10 / 2006	07 / 2009	5.2.19, anorganické technológie a materiály	Zoltán Lenčes, Ing. PhD., Ústav anorganickej chémie	Fakulta chemickej a potravinárskej technológie STU
*Michal Repiský	Interné štúdium hradené z prostried. d. SAV	09 / 2004	09 / 2009	11-56-9 Chemická fyzika	Vladimír Malkin, DrSc., Ústav anorganickej chémie	Prírodovedecká fakulta UK

Zoznam interných a externých doktorandov je uvedený v Prílohe A.

* Doktorandi, ktorí obhájili dizertačnú prácu po uplynutí času určeného na doktorandské štúdium.

3.4. Zoznam akreditovaných študijných odborov s uvedením VŠ

Tabuľka 3d Zoznam akreditovaných študijných odborov s uvedením univerzity/vysokej školy a fakulty, kde sa doktorandský študijný program uskutočňuje

Názov študijného odboru (ŠO)	Číslo ŠO	Doktorandský študijný program uskutočňovaný na: (univerzita/vysoká škola a fakulta)
chemická fyzika	4.1.11	Prírodovedecká fakulta UK
anorganická chémia	4.1.15	Prírodovedecká fakulta UK
anorganické technológie a materiály	5.2.19	Fakulta chemickej a potravinárskej technológie STU

Tabuľka 3e Účasť na pedagogickom procese

Menný prehľad pracovníkov, ktorí boli menovaní do spoločných odborových komisií pre doktorandské štúdium	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
Ing. Miroslav Boča, PhD. (anorganická technológia a materiály)	prof. Ing. Marek Liška, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	doc. Ing. Zoltán Lenčes, PhD. (doc., Vysoká škola báňská - TU Ostrava, Česká republika)
RNDr. Juraj Bujdák, PhD. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Fakulta priemyselných technológií TnUAD v Púchove)	
RNDr. Milan Drábik, CSc. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Fakulta chemické technologie VŠCHT, Praha, ČR)	

doc. Ing. Dušan Galusek, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	
Ing. Miroslav Hnatko, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Vysoké učení technické, Brno)	
RNDr. Peter Komadel, DrSc. (anorganická chémia)	prof. RNDr. Pavol Šajgalík, DrSc. (Vysoká škola báňská - TU Ostrava, Česká republika)	
doc. Ing. Zoltán Lenčéš, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Hutnícka fakulta TUKE)	
prof. Ing. Marek Liška, DrSc. (anorganická technológia a materiály)		
RNDr. Jana Madejová, DrSc. (anorganická technológia a materiály)		
prof. RNDr. Jozef Noga, DrSc. (chemická fyzika (aj pre chemické vedy))		
prof. RNDr. Pavol Šajgalík, DrSc. (anorganická technológia a materiály)		

3.5. Údaje o pedagogickej činnosti

Tabuľka 3f Prednášky a cvičenia vedené v roku 2009

PEDAGOGICKÁ ČINNOSŤ	Prednášky		Cvičenia	
	doma	v zahraničí	doma	v zahraničí
Počet prednášateľov alebo vedúcich cvičení	5	1	6	0
Celkový počet hodín v r. 2009	64	2	559	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	2
2.	Počet vedených alebo konzultovaných diplomových a bakalárskych prác	2
3.	Počet pracovníkov, ktorí pôsobili ako školitelia doktorandov (PhD.)	4
4.	Počet oponovaných dizertačných a habilitačných prác	7
5.	Počet pracovníkov, ktorí oponovali dizertačné a habilitačné práce	3
6.	Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby DrSc. prác	2

7.	Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby PhD. prác	5
8.	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

V roku 2009 bolo na ÚACH SAV vypísaných celkovo 16 tém na vypracovanie dizertačnej práce so začiatkom štúdia v roku 2009, na ktoré sa prihlásilo celkom sedem záujemcov. Z tohto počtu prihlásených študentov sme prijali na dennú formu štúdia s nástupom od 10/2009 piatich záujemcov. Dvaja študenti z Vysokej školy báňskej v Ostrave budú svoje dizertačné práce riešiť na našom pracovisku iba čiastočne v rámci spolupráce medzi ÚACH a Fakultou metalurgie a materiálového inžinierstva v Ostrave. Naši vedeckí pracovníci budú pre týchto študentov vo funkcii školiteľ špecialista. Oproti minulému roku, kedy sa na náš ústav neprihlásil žiadny záujemca o doktorandské štúdium, možno tento rok hodnotiť ako úspešný. Čiastočne mala zásluhu na tomto úspechu iniciatíva našich pracovníkov, ktorí pri každej príležitosti oboznamovali študentov 5. ročníkov o možnosti študovať na našom pracovisku, ako aj nápad informovať študentov formou informačných plagátov, ktoré boli vyvesené na viacerých vysokých školách a to nielen na Slovensku (oslovili sme fakulty v Brne a Ostrave, s ktorými má ÚACH podpísané zmluvy o spolupráci). V rámci nového kreovania a schvaľovania spoločnej odborovej komisie (SOK) v akreditovanom študijnom programe 5.2.19 Anorganická technológia a materiály bola pôvodná SOK rozšírená o dvoch nových pracovníkov z ÚACH, konkrétne ide o Ing. Miroslava Boču, PhD. a Ing. Miroslava Hnatka, PhD. V októbri 2009 sa uskutočnila pravidelne organizovaná medzinárodná Súťaž vedeckých prác mladých pracovníkov na pôde ÚACH SAV (s účasťou mladých pracovníkov ÚACH AV ČR v Řeži u Prahy). Na súťaži sa zúčastnilo celkovo 9 mladých pracovníkov a doktorandov nášho ústavu a traja z ÚACH AV ČR v Řeži pri Prahe. Komisia udelila prvé miesto Mgr. S. Komorovskému (ÚACH SAV), druhé miesto Ing. K. Kiracki, PhD. (ÚACH AV ČR) a dve tretie miesta Ing. L. Kipsovej, PhD. (ÚACH SAV) a Ing. J. Demelovi, PhD. (ÚACH AV ČR). Komisia konštatovala, že príspevky mali veľmi vysokú úroveň a to v kvalite vedeckých výsledkov aj v úrovni ich prezentácie. V roku 2009 sa dvaja pracovníci z ÚACH Ing. Ľ. Hric, PhD., a Ing. M. Pentrák, PhD. neúspešne uchádzali o finančný príspevok z Podporného fondu Štefana Schwarza na vytváranie postdoktorandských miest v SAV. Na ÚACH naďalej vyvíja činnosť Snem mladých vedeckých pracovníkov ako poradný orgán riaditeľa ústavu, ktorý združuje doktorandov a pracovníkov s VŠ vzdelaním do 35 rokov. Ich reprezentantka Ing. H. Pálková, PhD. je členkou širšieho vedenia ústavu. Jej prostredníctvom majú členovia snemu možnosť aktívne sa podieľať na chode ústavu a zapájať sa aj do aktivít, ktoré priamo nesúvisia iba s doktorandským štúdiom. Pod vedením Mgr. Stanislava Kedžucha, PhD. boli pravidelne organizované spoločné semináre pre doktorandov v rámci CE SAV COMCHEM v oblasti chemickej fyziky v rozsahu 24 hodín za rok 2009.

4. Medzinárodná vedecká spolupráca

4.1. Medzinárodné vedecké podujatia

4.1.1. Medzinárodné vedecké podujatia, ktoré organizácia SAV organizovala v roku 2009 alebo sa na ich organizácii podieľala, s vyhodnotením vedeckého a spoločenského prínosu podujatia

61. zjazd chemikov, Tatranské Matliare, Vysoké Tatry, 500 účastníkov, 07. 09. – 11. 09. 2009

The 3rd Japan-Czech-Slovak symposium on Theoretical and Computational Chemistry, Bratislava, 60 účastníkov, 09. 09. – 12. 09. 2009

4.1.2. Medzinárodné vedecké podujatia, ktoré usporiada organizácia SAV v roku 2010 (anglický a slovenský názov podujatia, miesto a termín konania, meno, telefónne číslo a e-mail zodpovedného pracovníka)

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	11	1	0

4.2. Členstvo a funkcie v medzinárodných orgánoch

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

RNDr. Milan Drábik, CSc.

- European Association for Chemical and Molecular Sciences (EuCheMS) (funkcia: člen v divízii anorganická chémia)
- International Union of Pure and Applied Chemistry (IUPAC) (funkcia: affiliate member v divízii II (anorganická chémia))

doc. Ing. Dušan Galusek, PhD.

- American Ceramic Society (funkcia: člen)
- European Society on Glass Science and Technology (funkcia: tajomník)

RNDr. Peter Komadel, DrSc.

- Association Internationale Pour L'Etude Des Argiles – AIPEA (funkcia: člen výboru)
- Clay Mineral Society (funkcia: člen)

doc. Ing. Zoltán Lenčéš, PhD.

- American Ceramic Society (funkcia: člen)
- Ceramic Society of Japan (funkcia: člen)
- European Ceramic Society (funkcia: člen)
- Materials Research Society (funkcia: člen)

Dr. Vladimír Malkin, DrSc.

- WATOC – World Association of Theoretical and Computational Chemists (funkcia: člen)

prof. RNDr. Jozef Noga, DrSc.

- WATOC – World Association of Theoretical and Computational Chemists (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)
- EuMat Technologická Platforma (funkcia: volený člen steering comitee)
- 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)

4.2.2. Členstvo v redakčných radách medzinárodných časopisov

Ing. Miroslav Boča, PhD.

- Chemical Papers (funkcia: Associate editor pre anorganickú chémiu)

RNDr. Milan Drábik, CSc.

- Central European Journal of Chemistry (funkcia: conference editor, hosťovský príspevok k edičnému spracovaniu rukopisov a publikácií odvodených od prezentácií na konferencii SSC 2008)
- Ceramics-Silikáty (funkcia: člen)
- ChemZi (funkcia: člen)
- Pure and Applied Chemistry (funkcia: conference editor, hosťovský príspevok k edičnému spracovaniu rukopisov a publikácií odvodených od prezentácií na konferencii SSC 2008)

RNDr. Peter Komadel, DrSc.

- Applied Clay Science (funkcia: člen)
- Clay Minerals (funkcia: člen)
- Clays and 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)
- Journal of Thermal Analysis and Calorimetry (funkcia: associate editor)
- Sklár a keramik (funkcia: člen)

prof. RNDr. Pavol Šajgalík, DrSc.

- Ceramics – Silikáty (funkcia: člen)
- Journal of Ceramic Science and Technology (funkcia: člen)
- Keramický Zpravodaj (funkcia: člen)
- Key Engineering Materials (funkcia: člen International Advisory Board)
- Processing and Application of Ceramics (funkcia: člen)

4.3. Účasť expertov na hodnotení medzinárodných projektov (EÚ RP, ESF a iných)**Tabuľka 4b** Počet pracovníkov hodnotiacich projekty

Meno	Typ programu/projektu	Počet
Šajgalík Pavol	Deutsche Forschungsgemeinschaft - German Research Foundation	30
	Member of the review panel of Ministry of Science, Research and Arts, Baden - Württemberg for the call: Materials Science Cerntres Baden – Württemberg, Germany	5

4.4. Najvýznamnejšie prínosy MVTS ústavu vyplývajúce z mobility a riešenia medzinárodných projektov a iné informácie k medzinárodnej vedeckej spolupráci*Krátkodobé pobyty pracovníkov ústavu zamerané na riešenie projektov***Balkovic Svetozár**

- AGH, Krakow, 16. – 20. 11. 2009. Pobyt sa uskutočnil v rámci MAD SAV a PAV. Pozornosť bola venovaná problematikám výskumu pórobetónových materiálov a súvisiacej taumazitovej korózie a konzistentnosti oboch kolektívov v prístupe k témam. Bol navrhnutý a obojstranne odsúhlasený podrobný program spolupráce na r. 2010 vr. relevantných WP v návrhu projektu FP7-SME-2010-1 BIOMAT.

Bujdák Juraj

- National Institute for Materials Science, Tsukuba, Japonsko, 22. 05 – 21.06. 2009. Náplňou cesty bola experimentálna práca spoločného bilaterálneho projektu v rámci MAD. Náplňou experimentálnej práce bola príprava filmov nanokompozitu fluorescenčného polyméru s organoilmi, prenos energie z matrice polyméru na častice organoilu, príprava filmov vrstevnatých kremičitanov a fluorescenčné vlastnosti gélov organoilov s adsorbovanými farbivami v xyléne. Práca náplňou nadväzovala na riešenie problémov projektu APVV 027405.
- V čase 29. 6. – 3. 7. 2009 som navštívil pracoviská Českej akadémie vied v rámci bilaterálnej spolupráce s Ústavom anorganické chemie AV ČR reprezentovanej Dr. Kamilom Langom. Navštívil som Ústav anorganické chemie AV ČR v Řeži (29. 6. – 1. 7. 2009) a Ústav fyzikální chemie Jaroslava Heyrovského AV ČR (2. – 3. 7. 2009). Pobyt sa realizoval v rámci dohody MAD. Merali sme fotochemické vlastnosti hybridných materiálov na báze vrstevnatých kremičitanov, laserového farbiva pomocou fluorescenčnej spektroskopie a konfokálnej fluorescenčnej mikroskopie.

Czímerová Adriana

- Institute of Polymers, Bulgarian Academy of Sciences, Sofia, Bulharsko, 13. 9. – 18. 9. 2009. Práca na báze bilaterálnej spolupráce s Prof. Ivom Grabchevom na základe MAD dohody. Detailný rozbor postupu experimentálnych prác. Na pracovisku boli vybrané a charakterizované fluorescenčné polyméry, syntetizované Prof. Ivom Grabchevom, ktoré budú predmetom ďalšieho výskumu. Dohodli sa ďalšie postupy merania fluorescenčných vlastností suspenzií ako aj filmov, ktoré boli pripravené na Ústave anorganickej chémie SAV.
- National Institute for Materials Science, Tsukuba, Japonsko, 22. 05. – 21. 06. 2009. Práca na báze bilaterálnej spolupráce so skupinou Dr. Nobua Iyiho na základe MAD dohody a úloh projektu APVV 027405. Príprava a charakterizácia hybridných materiálov pozostávajúcich z anorganických nosičov a organických farbív. Fotochemické vlastnosti systémov vrstevnatých

kreičitanov s porfyrínovými farbivami. Interakcia porfyrínových farbív s organoíli.

Čeklovský Alexander

- Institute of Polymers, Bulgarian Academy of Sciences, Sofia, Bulharsko, 13. 9. – 18. 9. 2009. Práca na báze bilaterálnej spolupráce s Prof. Ivom Grabchevom na základe MAD dohody. Výber a charakterizácia fluorescenčných látok pre nasledujúci výskum.

Drábik Milan

- University Surrey, Guildford, 29. 7. – 1. 8.2009. Pobyt sa uskutočnil v rámci projektu VEGA 0055. Cieľom pobytu boli konzultácie o výsledkoch dosiahnutých na partnerských pracoviskách a príprava špecifických meraní mikroštruktúrnych aspektov MDF materiálov vystavených vplyvu atmosférickej vlhkosti, ktoré budú realizované v University Surrey.
- AGH, Krakow, 16. – 20. 11. 2009. Pobyt sa uskutočnil v rámci projektu PORFIX. Boli konzultované výsledky spoločného vedeckého záujmu s dôrazom na detailnú diskusiu o aktualizácii položiek opakovaného návrhu projektu FP7-SME-2010-1 BIOMAT a pre partnerské kolektívy relevantné WP v tomto návrhu.

Hric Eubomír

- Département Matériaux Université Pierre et Marie Curie, Paríž, Francúzsko a Laboratoire des Multimateriaux et Interfaces Université Claude Bernard, Lyon, Francúzsko. V období 25. 02. – 04. 03. 2009. Pobyt na dvoch pracoviskách v rámci odborného seminára "Solid State NMR : applications to PDCs" a "Polymer Derived Ceramics Processing", ktoré boli pod vedením Dr. Florence Babonneau (Paríž) a Prof. Paolo Colombo (Lyon).

Komorovský Stanislav

- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 1. 7. – 21. 7.2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect (časť mDKS-RKB), pre rutinné výpočty EPR parametrov.
- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 17. 11. – 2. 12.2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect v spolupráci so skupinou prof. Martina Kauppa (časť MAG), pre efektívne výpočty chemického tienenia.

Malkin Vladimír

- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 1. 7. – 15. 7. 2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect a diskusia o budúcich spoločných projektoch s prof. Kauppom.
- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 26.7.-9.8.2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect a diskusia o budúcich spoločných projektoch s prof. Kauppom.

Malkin Oľga

- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 1. 7. – 15. 7. 2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect a diskusia o budúcich spoločných projektoch s prof. Kauppom.
- Julius-Maximilians-Universität Würzburg, Würzburg, Nemecko, 26. 7. – 9. 8. 2009. Pobyt sa uskutočnil v rámci projektov VEGA 0079 a APVV-0625-06. Cieľom pobytu bol vývoj programu ReSpect a diskusia o budúcich spoločných projektoch s prof. Kauppom.

Pálková Helena

- Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poľsko, 6. 4. – 27. 4. 2008. Pobyt sa uskutočnil v rámci medziakademickej spolupráce (MAD) medzi Ústavom anorganickej chémie SAV a Ústavom katalýzy a fyzikálnej chémie povrchov Poľskej akadémie vied v Krakove. Náplňou práce bolo uskutočnenie experimentov zahrnutých v spoločnom projekte "Novel porous materials based on layered silicates". Pobyt bol čiastočne financovaný z prostriedkov VEGA 2/0183/09.

Plachký Tomáš

- Université Pierre et Marie Curie, Département Matériaux, Paris, Francúzsko, 25. – 28. 2.2009. Pobyt sa uskutočnil v rámci projektu PolyCerNet MRTN-CT-019601. Náplňou práce bolo školenie s praktickými ukážkami "Solid State NMR: Applications to PDCs", tento kurz bol organizovaný pre študentov zapojených v projekte PolyCerNet.
- Technische universität Darmstadt, Darmstadt, Nemecko, 6. 7. – 8. 7.2009. Tento pracovný pobyt sa uskutočnil v rámci projektu PolyCerNet MRTN-CT-019601. Náplňou práce bolo školenie s praktickými ukážkami v laboratóriu na tému "Polymer Derived Ceramics: Synthesis, Processing and properties", tento kurz bol organizovaný pre študentov zapojených v projekte PolyCerNet.
- Hotel Jagdschloss Niederwald, Rüdesheim/Rhine, Nemecko, 23. 11. – 25. 11. 2009. Pobyt sa uskutočnil v rámci projektu PolyCerNet MRTN-CT-019601. Náplňou bolo záverečné stretnutie riešiteľov projektu 6RP EÚ PolyCerNet, Tomáš Plachký predniesol prezentáciu na tému "Processing and Mechanical Properties of Si₃N₄ Composites Employing Polymer-Derived SiAlOC as Sintering Aid".

Repiský Michal

- Ústav anorganickej chémie, Julius Maximilians Universität, Würzburg, Nemecko, 6. 7. – 20. 12. 2009. Pobyt sa uskutočnil v rámci projektu APVV 0625-06, dva mesiace pobytu boli hrazené z prostriedkov univerzity. Cieľom pobytu bol vývoj na programovom balíku ReSpect v spolupráci so skupinou Prof. Kauppa.

Scholtzová Eva

- Chalmers University of Technology, Gottenburg, Švédsko, 27. 4. – 6. 5. 2009. Pobyt sa uskutočnil v rámci projektov APVV 51-050505 a VEGA 2/0150. Cieľom pobytu boli monokryštálové difrakčné a spektroskopické experimenty na interkalovaných vermikulitoch a organických látkach s rôznymi vodíkovými väzbami.

Smrčok Ľubomír

- Chalmers University of Technology, Gottenburg, Švédsko, 27. 4. – 6. 5. 2009. Pobyt sa uskutočnil v rámci projektov APVV 51-050505 a VEGA 2/0150. Cieľom pobytu boli monokryštálové difrakčné a spektroskopické experimenty jednak na organických látkach s rôznymi vodíkovými väzbami a jednak na rôznych interkalovaných vermikulitoch.

Šimko František

- CNRS-CEMHTI, Orléans, Francúzsko, 24. – 30. 5. 2009 a 2. – 5. 9. 2009. Pobyt sa uskutočnil v rámci bilaterálneho projektu "Štefánik" č. SK-FR-0013-07. V oboch prípadoch bola náplňou práce charakterizácia binárnych sústav na báze RbF pomocou viacjadrovej vysokoteplotnej NMR spektroskopie. Použila sa aj MAS NMR spektroskopia na charakterizáciu zlúčenín RbF a LiRbF₂.

Dlhodobé pobyty pracovníkov ústavu realizované na základe získania štipendií na riešenie projektov
(viac ako 3 mesiace)

Andrejkovičová Slávka

- Department of Geosciences, University of Aveiro, Portugalsko, postdoktorandský výskumný pobyt (as assistant researcher in the area of Earth and Atmosphere sciences, subresearch field: Material science), 07. 2009 – 06. 2010. Skúmanie vplyvu pozolanovej aktivity metakaolínu na vlastnosti vápenných mált pre rekonštrukciu historických budov a príprava geopolymérov alkalickou aktiváciou metakaolínov a ich využitie pri reštaurovaní historických pamiatok.

Derzsi Mariana

- Varšavská univerzita, Varšava, Poľsko, 01/2009 – 12/2009. Štúdium supravodivosti v zlúčeninách na báze fluóru a striebra.

Micháľková Monika

- EMPA – Švajčiarske spolkové laboratóriá pre testovanie a výskum materiálov, Duebendorf, Švajčiarsko, 01/2009 – 6/2009. Keramické nanokompozity na báze oxidu hlinitého a uhlíkových nanorúrok.

Prednášky zahraničných pracovníkov, ktorí navštívili ÚACH SAV

Pavol Juhás, Columbia University, New York, USA

3D Puzzles – Structure Determination from Atomic Pair Distribution Function , 30. 09. 2009

Wojciech Grochala, Laboratory of Technology of Novel Functional Materials, The Faculty of Chemistry and ICM, University of Warsaw, Poland

Copper, silver and gold – different, different, different! 03. 06. 2009

Jun Kawamata, Yamaguchi University, Japan

Nonlinear optical properties of organic materials and clay/dye composites, 30. 10. 2009

Kazuko Fujii, National Institute for Material Sciences, Tsukuba, Japan

Fluorescence properties of dyes in solid-state heterogeneous systems, 29. – 30. 10. 2009

Yasutaka Suzuki, Yamaguchi University, Japan

Fabrication of Nonlinear Optical Materials Consisting of Dye-Clay Mineral Composites, 29. – 30. 10. 2009

*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

ÚACH má v rámci svojho Dlhodobého strategického rozvojového plánu v oblasti vedy a techniky stanovené vecné priority rozvoja vedy a techniky na svojej pôde. Základná štruktúra cieľov je nasledovná:

1. Zapájanie sa do komplexných aktivít budovania interdisciplinárnych kompetenčných centier a monotematických centier excelentnosti.
2. Medzinárodná vedecko-technická spolupráca vo výskume a vývoji ako nástroj na zvyšovanie kvality a potenciálu vedy a techniky.
3. Orientácia na perspektívne oblasti vedy a techniky vo väzbe na medzinárodné trendy a/alebo potreby odberateľskej praxe.
4. Transfer poznatkov a technológií do praxe.
5. Budovanie infraštruktúry – vytváranie lepších podmienok pre výskum a vývoj.
6. Prepájanie jednotlivých oblastí tzv. vedomostného trojuholníka – špičkové vzdelávanie – excelentný výskum – inovácie.
7. Zlepšovanie postavenia vedy a vedcov v spoločnosti.

Pri svojich koncepcných rozvojových zámeroch kladie ÚACH SAV maximálny dôraz nielen na ich súlad so základnými celoštátnymi dokumentmi, resp. stratégiami a predpismi na úrovni EÚ, ale súčasne za svoju prioritu považuje svoj vklad a príspevok v oblasti regionálneho rozvoja.

Vyššie uvedené prioritné oblasti sú v plnom súlade s Dlhodobým zámerom rozvoja štátnej vednej a technickej politiky SR do roku 2015, základným smerovaním a cieľmi Operačného programu Výskum a vývoj, Operačného programu Vzdelávanie, Modernizačného programu Slovensko 21 ako aj medzinárodnými trendmi v oblasti výskumu a vývoja – vrátane priorít 7. rámcového programu EÚ pre výskum a vývoj.

Pre splnenie dlhodobého zámeru a napĺňanie vyššie uvedených cieľov, ktoré sú v súlade s požiadavkami spoločensko-hospodárskej praxe, je potrebná výrazná inovácia a modernizácia vedecko-výskumnej infraštruktúry organizácie, vrátane podpory ľudských zdrojov.

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

Začiatok spolupráce: 1990

Zameranie: vedecká spolupráca

Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do spoločného centra excelentnosti SAV (COMCHEM), do výskumno-vzdelávacieho centra excelentnosti APVV (VVCE-0033-07). Spoločne sa riešia projekty VEGA a APVV. V spolupráci s touto fakultou sa intenzívne využíva prístrojové vybavenie spoločných pracovísk (pozri III. 5.). prof. RNDr. J. Noga, DrSc. má hlavný úväzok na fakulte a RNDr. M. Drábik, CSc. je členom Rigoróznej komisie na Katedre anorganickej chémie tejto fakulty. prof. RNDr. J. Noga, DrSc. je externým členom Vedeckej rady ÚACH SAV.

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 sa FChPT v roku 2008 stala štvrtým členom konzorcia a spoluzriaďovateľom Centra kompetencie skla Vitrum Laugaricio – VILA. Pracovníci ÚACH viedli na FChPT v roku 2009 dve bakalárske práce a 3 doktorandov. FCHPT je partnerom ÚACH SAV v projekte MACHINA (Centrum pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach), financovaného zo ŠF, OP VaV, ITMS kód projektu: 26240120007

Názov univerzity/vysokej školy a fakulty: Trenčianska univerzita Alexandra Dubčeka v Trenčíne

Druh spolupráce (spoločné pracovisko alebo iné): Centrum kompetencie skla Vitrum Laugaricio

Začiatok spolupráce: 1997

Zameranie: vedecká spolupráca

Zhodnotenie: Okrem spoločného pracoviska s TnU AD (Centrum kompetencie skla Vitrum Laugaricio) rieši ÚACH SAV v spolupráci s touto univerzitou spoločné projekty VEGA, APVV a projekt aplikovaného výskumu, ktorý však v roku 2009 nebol financovaný. V spolupráci s TnU AD pripravil ÚACH SAV dve žiadosti o nenávratný finančný príspevok v rámci Operačného programu VaV. Prof. RNDr. P. Šajgalík, DrSc. je členom vedeckej rady TnU AD. 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 a materiály na TnU AD. Pracovníci VILA školili v roku 2009 7 diplomantov TnU AD, viedli 3 bakalárske projekty a školili v rámci TnU AD 7 doktorandov.

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

Spoločné pracoviská s VŠ a univerzitami a inými ústavmi SAV

Centrum kompetencie skla VILA (Vitrum Laugaricio): V roku 2009 pokračovala činnosť Centra kompetencie skla Vitrum Laugaricio (skrátene VILA), spoločného pracoviska ÚACH SAV, TnU AD, FCHPT STU a RONA, a.s. Úlohou centra je stimulácia a rozvoj základného a aplikovaného výskumu v oblastiach súvisiacich so sklom ako materiálom, jeho výrobou a zušľacht'ovaním, a základný a aplikovaný výskum v oblasti pokročilých oxidových keramických a sklokeramických materiálov.

Pracovisko FTIR spektroskopie: FTIR spektrometer Nicolet Magna 750, využívajú zamestnanci partnerských pracovísk ÚACH SAV, CHÚ SAV, FCHPT STU a PriF UK. Prístroj slúži pre potreby základného výskumu a pre pedagogické účely jednotlivých užívateľov, pričom každý partner rieši svoje vlastné úlohy. V novembri 2008 bol z prostriedkov projektu APVV-VVCE (zod. riešiteľ P. Komadel) zakúpený nový FTIR spektrometer Nicolet 6700 s príslušenstvom, na ktorý čiastočne prispel v roku 2009 aj CHÚ SAV. Prístroj inštalovaný v priestoroch spoločného pracoviska FTIR spektroskopie výrazne zvýšil kapacitu pracoviska a vďaka vybaveniu spektrometra prídavnými zariadeniami rozšíril možnosti merania IČ spektier o nové techniky.

Pracovisko pre simultánnu TG-DTA analýzu: SDT 2960 T. A. Instruments. Prístroj má špičkové parametre pre termoanalytický výskum materiálov do teploty 1 500 °C. Popri pracovníkoch ÚACH ho využívajú na základe dohody pracovníci FCHPT STU, PriF UK a ÚSTARCH SAV pre riešenie úloh základného výskumu a pre pedagogické účely. Vedecké výsledky získané využitím tohto prístroja boli v roku 2009 predmetom viacerých spoločných publikácií a prednášok na konferenciách.

Pracovisko s vysokorozlišovacím rtg. práškovým difraktometrom: STOE STADI-P. Partneri dohody o vytvorení tohto pracoviska sú: FCHPT STU, PriF UK a ÚACH SAV. Prístroj sa využíva hlavne na merania veľmi malých množstiev vzoriek a na získavanie dát určených na stanovenie mriežkových parametrov alebo spresňovanie kryštálových štruktúr.

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

7.1. Spoločné pracoviská s aplikačnou sférou

Názov pracoviska: Centrum kompetencie skla Vitrum Laugaricio – VILA

Partner(i): RONA a.s., TnU AD, FCHPT STU

Zameranie: Stimulácia a rozvoj základného a aplikovaného výskumu

Rok založenia: 2004

Zhodnotenie: V roku 2009 pokračovala činnosť Centra kompetencie skla Vitrum Laugaricio (skrátene VILA), spoločného pracoviska ÚACH SAV, TnU AD, FChPT STU a RONA, a.s. Úlohou centra je stimulácia a rozvoj základného a aplikovaného výskumu v oblastiach súvisiacich so sklom ako materiálom, jeho výrobou a zušľacht'ovaním, a základný a aplikovaný výskum v oblasti pokročilých oxidových keramických a sklokeramických materiálov. V rámci centra pripravil ÚACH v spolupráci s RONA jednu žiadosť o nenávratný finančný príspevok v rámci Operačného programu VaV.

7.2. Kontraktový – zmluvný výskum (vrátane zahraničných kontraktov)

Názov kontraktu: Silicon nitride sialons for refractory

Partner(i): RHI AG, Technology Center, Standort Leoben, Austria; Montan Universität, Leoben, Austria

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2008

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2010

Názov kontraktu: Dlhodobé sledovanie pórobetónu vyrobeného z fluidného popolčeka

Partner(i): PORFIX - pórobetón, a.s.

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2009

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

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 Národnej rady SR, vlády SR, ministerstiev SR

Tabuľka 8a Členstvo v poradných zboroch Národnej rady SR, vlády SR, ministerstiev SR

Meno pracovníka	Názov orgánu	Funkcia
doc. Ing. Dušan Galusek, PhD.	Komisia pre námietky pri verejnom obstarávaní	externý člen
	Ministerstvo obrany Slovenskej republiky	národný expert SR v European Defense Agency
prof. RNDr. Jozef Noga, DrSc.	Akreditačná komisia SR	člen pracovnej skupiny pre oblasť výskumu Chémia, chemická technológia a biotechnológie
prof. RNDr. Pavol Šajgalík, DrSc.	Komisia ministra školstva pre udeľovanie Ceny ministra školstva	člen

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

Názov expertízy: Spoluautor úloh Chemickej olympiády v kategórii B

Adresát expertízy: MŠ SR

Spracoval: RNDr. Juraj Bujdák, 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
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8.4. Prehľad aktuálnych spoločenských problémov, ktoré riešilo pracovisko v spolupráci s Kanceláriou prezidenta SR, s vládnyimi a parlamentnými orgánmi alebo pre ich potrebu

NOGA Jozef: Akreditačná komisia SR (funkcia: člen pracovnej skupiny pre oblasť výskumu Chémia, chemická technológia a biotechnológie). Aktívna účasť pri komplexných akreditáciách vysokých škôl.

9. Vedecko-organizačné a popularizačné aktivity

9.1. Vedecko-popularizačná činnosť

Tabuľka 9a Vedecko-popularizačná činnosť

Meno/Spoluautori	Názov	Miesto zverejnenia	Dátum
doc. Ing. Dušan Galusek, PhD.	Nový účinný priehľadný pancier	Quark	1.11.2009
prof. RNDr. Pavol Šajgalík, DrSc.	„Veda a fondy“ – z tlačovej konferencie TI SAV	Rádio Slovensko	23.2.2009
prof. RNDr. Pavol Šajgalík, DrSc.	Centrum pre Materiály, vrstvy a systémy pre Aplikácie a Chemické procesy v extrémnych podmienkach	Acta Metallurgica Slovaca, vol.15, str. 131-132	1.2.2009
prof. RNDr. Pavol Šajgalík, DrSc.	S novými prístrojmi na európsku úroveň	Quark 10, str 8-9	1.10.2009
prof. RNDr. Pavol Šajgalík, DrSc.	Slovensko päť rokov členom EÚ, rozhovor	STV 2, televízna stanica	12.5.2009
prof. RNDr. Pavol Šajgalík, DrSc. Spoluautor: Ing. M. Boča, PhD.	MACHINA – Centrum pre Materiály, vrstvy a systémy pre Aplikácie a Chemické procesy v extrémnych podmienkach.	ChemZi, 5/9 2009, str. 113	5.9.2009

9.2. Vedecko-organizačná činnosť

Tabuľka 9b Vedecko-organizačná činnosť

Názov podujatia	Domáca/ medzinárodná	Miesto	Dátum konania	Počet účastníkov
Anisotropic fluorescent thin films based on organic dyes embedded in layered inorganics	domáca	Bratislava	29.10.-30.10.2009	-
Seminár o korózii keramických materiálov	domáca	Smolenice	30.11.-01.12.2009	30
61. zjazd chemikov	medzinárodná	Tatranské Matliare, Vysoké Tatry	07.09.-11.09.2009	500
The 3rd Japan-Czech-Slovak symposium on Theoretical and Computational Chemistry	medzinárodná	Bratislava	09.09.-12.09.2009	60

9.3. Účasť na výstavách

Názov výstavy: Noc výskumníka 2009

Miesto konania: Bratislava

Dátum: 25. 9. 2009

Zhodnotenie účasti: V rámci expozície ÚACH SAV vystavovanie transparentného panciera vyvinutého v rámci projekt NATO SfP 981770

Názov výstavy: Výstava Centier excelentnosti vo výskume a vývoji

Miesto konania: Bratislava

Dátum: 5. 11. 2009

Zhodnotenie účasti: V dňoch 5. – 8. novembra 2009 prebiehala výstava Centier excelentnosti vo výskume a vývoji v náväznosti na Týždeň vedy a techniky na Slovensku pod záštitou Ministerstva školstva SR. Na tejto výstave bolo prezentované aj CE MACHINA, kde okrem centra excelentnosti boli prezentované zaujímavé výsledky jednotlivých ústavov, ktoré tvoria CE MACHINA.

Názov výstavy: IDET – 10. medzinárodný veľtrh obrannej a bezpečnostnej techniky

Miesto konania: Brno

Dátum: 5. 5. 2009

Zhodnotenie účasti: Spolu so SGAC Turnov vystavovanie transparentného panciera vyvinutého v rámci projekt NATO SfP 981770

Názov výstavy: AGROKOMPLEX 2009

Miesto konania: Nitra

Dátum: 20. 9. 2009

Zhodnotenie účasti: Na 36. ročníku výstavy Agrokomplex 2009 v dňoch 20. – 23. 08.2009 bolo v rámci prezentácií ústavov SAV predstavené Centrum excelentnosti MACHINA, ktoré vzniklo na Ústave anorganickej chémie SAV na základe úspešnej žiadosti o nenávratný finančný príspevok zo zdrojov ES.

Názov výstavy: ELO-SYS – 15. ročník medzinárodného veľtrhu elektrotechniky, elektroniky a energetiky

Miesto konania: Trenčín

Dátum: 13. 10. 2009

Zhodnotenie účasti: Prezentácia výsledkov VILA v rámci expozície TnU AD

9.4. Účasť v programových a organizačných výboroch národných konferencií

Tabuľka 9c Programové a organizačné výbory národných konferencií

Typ výboru	Programový	Organizačný	Programový i organizačný
Počet členstiev	1	2	0

9.5. Členstvo v redakčných radách domácich časopisov

9.6. Činnosť v domácich vedeckých spoločnostiach

Mgr. Slávka Andrejkovičová, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Svetozár Balkovic, CSc.

- Slovenská chemická spoločnosť (funkcia: člen)

Ing. Miroslav Boča, PhD.

- Humboldtov klub v SR (funkcia: člen)
- Slovenská chemická spoločnosť (funkcia: člen)

RNDr. Juraj Bujdák, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Adriana Czímerová, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Alexander Čeklovský, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

RNDr. Milan Drábik, CSc.

- Slovenská chemická spoločnosť (funkcia: predseda Predsedníctva SCHS (od r. 2009))
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

doc. Ing. Dušan Galusek, PhD.

- Humboldtov klub v SR (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská sklárska spoločnosť (funkcia: člen predstavenstva, vedecký tajomník)

RNDr. Jana Hrachová, PhD.

- Slovenská chemická spoločnosť (funkcia: člen)
- Slovenská ílová 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)

Ing. Radovan Karell, PhD.

- Česká sklárska spoločnosť (funkcia: člen)
- Slovenská sklárska spoločnosť (funkcia: člen)

Mgr. Stanislav Kedžuch, PhD.

- Slovenská chemická spoločnosť (funkcia: člen)

RNDr. Peter Komadel, DrSc.

- Slovenská chemická spoločnosť (funkcia: člen výboru Odbornej skupiny anorganická chémia)
- Slovenská ílová spoločnosť (funkcia: podpredseda)

Ing. Michal Korenko, PhD.

- Slovenská chemická spoločnosť (funkcia: predseda odbornej skupiny anorganická chémia)
- Slovenská nukleárna spoločnosť (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)
- Slovenská spoločnosť pre povrchové úpravy (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 sklárska spoločnosť (funkcia: podpredseda)

RNDr. Jana Madejová, DrSc.

- Slovenská ílová spoločnosť (funkcia: predseda spoločnosti)

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: vedecký tajomník)

Ing. Helena Pálková, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

Ing. Martin Pentrák, PhD.

- 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)

prof. RNDr. Pavol Šajgalík, DrSc.

- Humboldtov klub v SR (funkcia: člen)
- Slovenská silikátová vedecko-technická spoločnosť (funkcia: predseda)
- Slovenská sklárska spoločnosť (funkcia: člen predstavenstva)

Ing. František Šimko, PhD.

- Slovenská chemická spoločnosť (funkcia: člen)

Mgr. Peter Švančárek, PhD.

- Slovenská sklárska spoločnosť (funkcia: člen)

Ing. Jana Valúchová, PhD.

- Slovenská ílová spoločnosť (funkcia: člen)

9.7. Iné dôležité informácie o Vedecko-organizačných a popularizačných aktivitách**10. Činnosť knižnično-informačného pracoviska****10.1. Knižničný fond***Tabuľka 10a* Knižničný fond

Knižničné jednotky spolu		7457
z toho	knihy a zviazané periodiká	7457
	audiovizuálne dokumenty	
	elektronické dokumenty (vrátane digitálnych)	
	mikroformy	
	iné špeciálne dokumenty - dizertácie, výskumné správy	
Počet titulov dochádzajúcich periodík		8
z toho zahraničné periodiká		6
Ročný prírastok knižničných jednotiek		85
v tom	kúpou	85
	darom	
	výmenou	
	bezodplatným prevodom	
Úbytky knižničných jednotiek		
Knižničné jednotky spracované automatizovane		

10.2. Výpožičky a služby*Tabuľka 10b* Výpožičky a služby

Výpožičky spolu		140
z toho	odborná literatúra pre dospelých	
	výpožičky periodík	60
	prezenčné výpožičky	
MVS iným knižniciam		
MVS z iných knižníc		
MMVS iným knižniciam		
MMVS z iných knižníc		80
Počet vypracovaných bibliografií		
Počet vypracovaných rešerší		

10.3. Používatelia

Tabuľka 10c Užívatelia

Registrovaní používatelia	
Návštevníci knižnice spolu (bez návštevníkov podujatí)	200

10.4. Iné údaje

Tabuľka 10d Iné údaje

On-line katalóg knižnice na internete (1=áno, 0=nie)	
Náklady na nákup knižničného fondu v €	3289,38

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

11.3. Členstvo vo vedeckých kolégiách SAV

RNDr. Peter Komadel, DrSc.

- VK SAV pre chemické vedy (člen)
- VK SAV pre elektroniku, materiálový výskum a technológie (člen)

prof. RNDr. Jozef Noga, DrSc.

- VK SAV pre chemické vedy (predseda)

prof. RNDr. Pavol Šajgalík, DrSc.

- VK SAV pre chemické vedy (člen)

11.4. Členstvo v komisiách SAV

RNDr. Milan Drábik, CSc.

- Komisia pre duševné vlastníctvo (patenty a autorské práva) (člen komisie)

prof. RNDr. Jozef Noga, DrSc.

- Akreditačná komisia SAV (člen komisie)

prof. RNDr. Pavol Šajgalík, DrSc.

- Komisia SAV pre vednú politiku a prognózy vývoja vedy a spoločnosti (člen)
- Rada SAV pre vzdelávanie a doktorandské štúdium (člen)

11.5. Členstvo v orgánoch VEGA

doc. Ing. Dušan Galusek, PhD.

- VEGA č. 7 pre strojárstvo a príbuzné odbory informačných a komunikačných technológií a materiálové inžinierstvo (člen)
- VEGA č.5, pre strojárstvo, hutníctvo a materiálové inžinierstvo (člen komisie)

prof. Ing. Marek Liška, DrSc.

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

RNDr. Jana Madejová, DrSc.

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

Dr. Vladimír 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 €)

Kategória	Posledný upravený rozpočet r. 2009	Čerpanie k 31.12.2009 celkom	z toho:	
			z rozpočtu	z mimoroz. zdrojov
Výdavky spolu	1506168	1875902	1505124	370778
z toho:				
- kapitálové výdavky	432036	432035	432035	
- bežné výdavky	1074132	1443867	1073089	370778
z toho:				
- mzdové výdavky	648278	699725	648278	51447
odvody do poisťovní a NÚP	221365	239029	221124	17905
- tovary a ďalšie služby	204488	505113	203687	301426
z toho:				
- výdavky na projekty (VEGA, APVV, ŠPVV, MVTP, ESF)	114221	476524	114221	362303
- výdavky na periodickú tlač				
- transfery na vedeckú výchovu	34951	42493	34951	7542

12.2. Príjmy RO SAV**Tabuľka 12b** Príjmy RO SAV (v €)

Kategória	Posledný upravený rozpočet r. 2009	Plnenie k 31.12.2009
Príjmy spolu:	10197	380983
z toho:		
rozpočítované príjmy (účet 19)	10197	10205
z toho:		
- príjmy za nájomné	9957	9958
mimorozpočtové príjmy (účet 780)		370778

12.1. Náklady PO SAV**12.2. Tržby PO SAV****13. Nadácie a fondy pri organizácii SAV****14. Iné významné činnosti organizácie SAV**

Ústav bol aj v roku 2009 aktívnou súčasťou Technologického inštitútu SAV (TI SAV). Opodstatnenosť existencie a potreba koordinácie činnosti všetkých zúčastnených inštitúcií v rámci TI SAV sa ukázala ako mimoriadne efektívna najmä pri získavaní projektov zo Štrukturálnych fondov EÚ. ÚACH SAV sa podieľa na dvoch projektoch koordinovaných TI SAV ako partner. Účasťou na aktivitách TI SAV významne stúpila úspešnosť a zapojenie sa ústavu do projektov ŠF a tým aj schopnosť obnovy prístrojovej infraštruktúry ústavu.

15. Vyznamenania, ocenenia a ceny udelené pracovníkom organizácie v roku 2009**15.1. Domáce ocenenia****15.1.1. Ocenenia SAV****15.1.2. Iné domáce ocenenia**KOMADEL Peter

Prémia za výnimočný vedecký ohlas v kategórii technické vedy a geovedy za roky 2006 – 2008
Oceňovateľ: Literárny fond, Sekcia pre vedeckú a odbornú literatúru a počítačové programy

MADEJOVÁ Jana

Oceňovateľ: Literárny fond, Sekcia pre vedeckú a odbornú literatúru a počítačové programy
Opis: Prémia za výnimočný vedecký ohlas na jedno dielo v kategórii prírodné a lekárske vedy

15.2. Medzinárodné ocenenia

ŠAJGALÍK Pavol

Pamätná medaila

Oceňovateľ: Vysoká škola báňská, Technická univerzita Ostrava

Opis: Odovzdaná pri príležitosti 160. výročia vzniku 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

Doktorandi z krajín mimo EÚ

Významný problém, nielen SR ale aj vyspelých krajín sveta, je kvalita domácej základne študentov v prírodných a technických vedách. S tým súvisí aj problém obnovy a skvalitnenia ľudských zdrojov zameraných na vedeckú kariéru. Podstatným zázemím pre takto orientovaných pracovníkov je doktorandské štúdium. Vyspelé krajiny Európskej únie pri zhodnotení podvýživenosti domácich zdrojov vhodných pre doktorandské štúdium otvorili vedecké pracoviská a univerzity pre študentov z tretích krajín, mimo EÚ. Systém štipendií a možnosť práce na vedeckých projektoch pre týchto pracovníkov bez pracovného povolenia umožňuje v krajinách západnej Európy udržiavať vysoký štandard vedeckých výstupov a tak aj vytvoriť potenciál pre inovácie v priemysle. Aj v SR je nutné sa týmto problémom zaoberať. Navrhujeme legislatívnu iniciatívu P SAV zameranú na tento problém.

Správu o činnosti organizácie SAV spracoval(i): RNDr. Jana Madejová, DrSc.
Tel: 02-59410-406

Prílohy

Príloha A

Zoznam zamestnancov a doktorandov organizácie k 31.12.2009**Zoznam zamestnancov podľa štruktúry** (nadväzne na údaje v Tabuľke 1a)

	Meno s titulmi	Úväzok (v %)	Riešiteľská kapacita (v hod/rok)
Vedúci vedeckí pracovníci DrSc.			
1.	RNDr. Peter Komadel, DrSc.	100	2000
2.	prof. Ing. Marek Liška, DrSc.	45	900
3.	RNDr. Jana Madejová, DrSc.	100	2000
4.	Dr. Oľga Malkin, DrSc.	100	2000
5.	Dr. Vladimír Malkin, DrSc.	100	2000
6.	prof. RNDr. Jozef Noga, DrSc.	53	1060
7.	prof. RNDr. Pavol Šajgalík, DrSc.	100	2000
Samostatní vedeckí pracovníci			
1.	Ing. Miroslav Boča, PhD.	100	2000
2.	RNDr. Juraj Bujdák, PhD.	100	2000
3.	RNDr. Milan Drábik, CSc.	100	2000
4.	doc. Ing. Dušan Galusek, PhD.	100	2000
5.	Ing. Miroslav Hnatko, PhD.	100	2000
6.	Ing. Štefan Kavecký, CSc.	33	660
7.	Ing. Ladislav Kosa, CSc.	70	1400
8.	doc. Ing. Zoltán Lenčéš, PhD.	100	2000
9.	doc. Ing. Pavel Mach, CSc.	25	500
10.	Ing. Ivan Nerád, CSc.	100	2000
11.	Ing. Eva Scholtzová, CSc.	100	2000
12.	RNDr. Ľubomír Smrčok, CSc.	100	2000
Vedeckí pracovníci			
1.	Mgr. Slávka Andrejkovičová, PhD.	100	1000
2.	Ing. Svetozár Balkovic, CSc.	100	2000
3.	Mgr. Adriana Czímerová, PhD.	100	2000
4.	Mgr. Alexander Čeklovský, PhD.	100	2000
5.	Mgr. Mariana Derzsi, PhD.	0	0
6.	Ing. Katarína Ghillányová, PhD.	100	2000
7.	RNDr. Jana Hrachová, PhD.	100	2000

8.	Mgr. Ľubomír Hric, PhD.	100	2000
9.	Mgr. Peter Hrobárik, PhD.	100	330
10.	Ing. Mária Chromčíková, PhD.	100	2000
11.	Mgr. Ľuboš Jankovič, PhD.	100	2000
12.	Ing. Radovan Karell, PhD.	100	2000
13.	Mgr. Stanislav Kedžuch, PhD.	100	2000
14.	Ing. Linda Kipsová, PhD.	100	2000
15.	Mgr. Stanislav Komorovský, PhD.	100	2000
16.	Ing. Michal Korenko, PhD.	0	0
17.	Ing. Blanka Kubíková, PhD.	100	2000
18.	Ing. Marián Kucharík, PhD.	0	0
19.	Ing. Monika Micháľková, PhD.	100	2000
20.	Ing. Matúš Milko, PhD.	0	0
21.	Ing. Jarmila Mlynáriková, PhD.	0	0
22.	Ing. Zuzana Netriová, PhD.	0	0
23.	Ing. Helena Pálková, PhD.	100	2000
24.	Ing. Martin Pentrák, PhD.	100	2000
25.	Ing. Tomáš Plachký, PhD.	100	2000
26.	Ing. Anna Prnová, PhD.	100	666
27.	Mgr. Michal Repiský, PhD.	100	1500
28.	Ing. Jaroslav Sedláček, PhD.	100	2000
29.	Ing. František Šimko, PhD.	100	2000
30.	doc. Ing. Peter Šimurka, PhD.	100	1000
31.	Mgr. Peter Švančárek, PhD.	100	2000
32.	Ing. Jana Valúchová, PhD.	0	0
33.	Ing. Štefan Varga, CSc.	100	2000
34.	Ing. Martin Vitkovič, PhD.	100	333
Odborní pracovníci s VŠ vzdelaním			
1.	prom.farm. Ľubica Gáliková	100	2000
2.	RNDr. Klára Hrnčiarová	40	800
3.	Ing. Petra Jeřábková	100	1160
4.	Ing. Ľubomír Koleda	100	1000
5.	Ing. Judita Lilová	50	1000
6.	Ing. Iveta Macková	100	2000
7.	Ing. Eva Mikšíková	125	2500

8.	Ing. Ján Piško	100	2000
9.	Ing. Jozef Priščák	100	2000
Odborní pracovníci ÚSV			
1.	Miroslav Baďura	20	400
2.	Iveta Bouadjenak	100	2000
3.	Jaromíra Dankovičová	125	2500
4.	Jarmila Heinleinová	100	2000
5.	Katarína Hlavačková	80	1600
6.	Miriám Hnatková	100	666
7.	Anna Jurová	100	2000
8.	Zdena Kapišinská	100	2000
9.	Magdaléna Kňazovičová	125	2500
10.	Anna Kovárová	100	2000
11.	Zora Lukáčová	100	2000
12.	Zuzana Rosíková	100	2000
13.	Jozef Sitár	100	2000
14.	Alexandra Tonkovičová	100	2000
Ostatní pracovníci			
1.	Ján Maraľfko	100	2000
2.	Dana Matejkinová	100	2000
3.	Terézia Pírová	100	2000

Zoznam doktorandov

Meno s titulmi		Škola/fakulta	Štúdiijný odbor
Interní doktorandi hradení z prostriedkov SAV			
1.	Mgr. Anna Brtáňová	Prírodovedecká fakulta UK	anorganická chémia: 4.1.15
2.	Ing. Františka Frajkorová	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19
3.	Ing. Jozef Chovanec	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19
4.	Ing. Martin Michálek	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19
5.	Ing. Marcel Pargáč	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19

Interní doktorandi hradení z iných zdrojov			
1.	Ing. Peter Barborík	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19
2.	Mgr. Anežka Křístková	Prírodovedecká fakulta UK	chemická fyzika: 4.1.11
Externí doktorandi			
1.	Ing. Dagmar Galusková	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19
2.	Ing. Jana Sabošová	Fakulta chemickej a potravinárskej technológie STU	anorganické technológie a materiály: 5.2.19

Príloha B

Projekty riešené v organizácii

Medzinárodné projekty

Programy: 6RP

1.) Multifunkčná nanokeramika pripravená z polymérov s vopred určenými vlastnosťami *(Tailored Multifunctional Polymer-derived nanoCeramics)*

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 1. 2006 / 31. 12. 2009
Evidenčné číslo projektu: MRTN-CT-2005-019601
Organizácia je nie
koordinátorom projektu:
Koordinátor: Prof. Gian Domenico Sorarù, Dipartimento di Ingegneria dei Materiali e Tecnologie Industriali, Trento
Počet spoluriešiteľských inštitúcií: 12 – Nemecko: 5, Francúzsko: 3, Taliansko: 2, Rumunsko: 2
Čerpané financie: EU – 38463 €

Dosiahnuté výsledky:

Úspešne sa podarilo zvládnuť prípravu multifunkčnej nanokeramiky z polymérov, bol optimalizovaný režim spekania a popísaný mechanizmus tvorby nanoštruktúr počas spekania.

Výsledky sú zhrnuté v publikáciách:

- Hegedúsová L., Kašiarová M., Dusza J., Hnatko M., Šajgalík P.: Mechanical properties of carbon-derived Si_3N_4 +SiC micro/nano-composite. International Journal of Refractory Metals and Hard Materials, 2009, **27**, 438-442.
- Hegedúsová L., Ceniga L., Dusza J., Hnatko M., Šajgalík P.: Contact strength of monolithic and composite ceramic materials. Kovové materiály, 2009, roč. **47**, 389-399.
- Kovalčíková A., Dusza J., Šajgalík P.: Strength degradation flaws in the liquid-phase-sintered SiC based ceramics. Key Engineering Materials, 2009, **409**, 350-353.

Programy: Medziakademická dohoda (MAD)

2.) Anizotropné tenké filmy hybridných materiálov organických farbív a vrstevnatých kremičitanov s luminiscenčnými vlastnosťami *(Anisotropic fluorescent thin films based on organic dyes embedded in layered inorganics)*

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1. 4. 2008 / 31. 3. 2010
Evidenčné číslo projektu:
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 4 – Japonsko: 4
Čerpané financie: 0 €

Dosiahnuté výsledky:

Experimenty boli zamerané na testovanie vhodnosti rôznych metód a postupov prípravy fotochemicky aktívnych hybridných filmov na báze anorganického nosiča a organických farbív. Tvorba supramolekulových systémov kationových farbív závisí jednak od náboja vrstiev anorganického nosiča ako aj od molekulovej štruktúry farbiva. Z rozhodujúcich parametrov štruktúry farbív ovplyvňujúcich vznik supramolekulových systémov boli veľkosť katiónov, náboj, molekulový tvar, podstata a rozmiestenie iónových funkčných skupín, polarita heteroaromatického systému, a

podobne. Hlavnou náplňou prác bola príprava filmov nanokompozitu fluorescenčného polyméru s organoílmí, prenos energie z matrice polyméru na častice organoílu, príprava filmov vrstevnatých kremičitanov pomocou LBL (layer-by-layer assemblies) metódy a riadený prenos energie medzi vrstvami.

3.) Nové hybridné materiály založené na fluorescenčných polyméroch vo vrstvách anorganických nosičov. (New hybrid materials based on fluorescent polymers on inorganic carriers)

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1. 1. 2008 / 31. 12. 2010
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 - Bulharsko: 1
Čerpané financie: 0 €

Dosiahnuté výsledky:

Cieľom tohto projektu bol vývoj nových luminiscenčných materiálov zložených z nanokompozitov, ktoré pozostávajú z organickej a anorganickej zložky. Experimentálne práce ukázali, že optické vlastnosti, ako absorpcia svetla a fluorescencia sa významne menia, vzhľadom na fyzikálno-chemické vlastnosti použitého polyméru.

4.) Fluorescenčné hybridné vrstevnaté materiály (Hybrid layered materials with fluorescent properties.)

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1. 1. 2009 / 31. 12. 2011
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 – Česko: 1
Čerpané financie: 0 €

Dosiahnuté výsledky:

Cieľom bola príprava fotochemicky aktívnych foriem na báze chromofórov a anorganických vrstevnatých nosičoch. Pomocou chemickej modifikácie nosiča sa podarilo pripraviť hybridy, ktoré mali zaujímavé spektrálne vlastnosti. Niektoré z materiálov vykazovali vlastnosti účinných dezinfekčných materiálov fungujúcich na báze fotochemickej aktivácie kyslíka.

Publikácie:

- Bujdák J., Jurečková J., Bujdaková H., Lang K., Šeršeň F.: Clay mineral particles as efficient carries of methylene blue used for antimicrobial treatment. Environmental Science and Technology, 2009, **43**, 6202-6207.

5.) Nové pórovité materiály na báze vrstevnatých silikátov (Novel porous materials based on layered silicates)

Zodpovedný riešiteľ: Jana Madejová
Trvanie projektu: 1.1.2007 / 31.12.2009
Evidenčné číslo projektu: 14
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 – Poľsko: 1
Čerpané financie: 0 €

Dosiahnuté výsledky:

Boli vyhodnotené experimentálne výsledky získané pri sledovaní vplyvu podmienok na jednotlivé stupne syntézy mezopórových materiálov (porous clay heterostructures – PCH), ktoré boli pripravené z HDTMA-formy trioktaedrického smektitu Laponitu.

Výsledky sú zhrnuté v prácach:

- Pálková H., Madejová J., Zimowska M., Bielańska E., Olejniczak Z., Lityńska-Dobrzyńska L., Serwicka E.M.: Laponite-derived porous clay heterostructures: I. Synthesis and physicochemical characterization. Microporous and Mesoporous Materials, 2010, **127**, 228-236.
- Pálková H., Madejová J., Zimowska M., Serwicka E.M.: Laponite-derived porous clay heterostructures: II. FTIR study of the structure evolution. Microporous and Mesoporous Materials, 2010, **127**, 237-2244.
- Pálková H., Madejová J., Kryściak-Czerwenka J., Zimowska M., Serwicka E.M.: Laponite-derived porous clay heterostructures: III. Influence of alumination on PCH physicochemical characteristics II. Microporous and Mesoporous Materials (pripravená na zaslanie).

Programy: NATO,

6.) Transparentné panciere s nízkou hmotnosťou (Light weight and transparent armours)

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1. 3. 2006 / 31. 3. 2009
Evidenčné číslo projektu: NATO Sfp 981770
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 5 – Česko: 2, Rusko: 2, Ukrajina: 1
Čerpané financie: NATO – 1500 €

Dosiahnuté výsledky:

Získanie certifikátu pre mieru balistickej ochrany úroveň 3 podľa medzinárodného štandardu STANAG 4569 pre nový koncept vrstveného panciera vyvinutého v rámci projektu.

Programy: Bilaterálne - iné

7.) Štúdium roztavených fluoridových sústav zaujímavých pre chladiace systémy v pokročilých vysokoteplotných reaktoroch. (Experimental study of molten fluoride salts as coolants in Advanced High Temperature Reactors.)

Zodpovedný riešiteľ: František Šimko
Trvanie projektu: 1. 2. 2008 / 31. 12. 2009
Evidenčné číslo projektu: SK – FR - 0013 – 07
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 1073 €

Dosiahnuté výsledky:

Vysokoteplotná NMR spektroskopia bola použitá na špecifikáciu štruktúry fluoridových tavenín, využiteľných ako vysoko-teplotné chladiace médiá pre pokročilé jadrové reaktory na báze roztavených solí. Táto nová metóda je vhodná na skúmanie lokálnej štruktúry okolo vybraného jadra katiónu– alebo –aniónu, bez obmedzenia spôsobeného neusporiadanosťou v kvapalinách alebo amorfných látkach, ako je to pri niektorých iných vysoko-teplotných metódach. Analyzuje lokálne prostredie okolo skúmaného jadra v roztavenom médiu a poskytuje informácie o ich koordinácii, povahe okolitých aniónov (katiónov) v systéme, a teda o povahe chemických komplexov, vznikajúcich v tavenine možnou chemickou reakciou. Spôsob merania pomocou vysoko-teplotnej NMR je založený na popise lokálnej štruktúry taveniny pomocou selektívneho pozorovania viacerých izotopov, prítomných v tavenine. V našom prípade išlo o

izotopy ^{19}F , ^{39}K , ^{23}Na a ^{85}Rb pri analýze fluoridových systémov alkalických kovov, a to konkrétne LiF-RbF , NaF-RbF , KF-RbF , LiF-NaF a NaF-KF . Analyzovali sa všetky uvedené sústavy v ich celom koncentračnom rozmedzí. Výsledky sú v štádiu vyhodnocovania. Prvé závery už boli prezentované už tento rok na medzinárodnej konferencii o jadrovej energetike v Brne, v Českej Republike. Tiež sa pripravuje publikácia výsledkov vo vybranom karentovanom časopise.

Konferencie:

- Šimko F., Rakhmatullin A. and Bessada C.: The study of structure of molten fluoride systems interesting for coolants in advanced molten salts nuclear reactors. 9th St. Nicholas meeting of young generation Czech nuclear society, 2-4.12.2009, Brno, Czech Republic.
- Rakhmatullin A., Šimko F., Bessada C.: Structure of Molten alkaline fluorides by multinuclear magnetic resonance, EUCHEM Conference on Molten Salts and Ionic Liquids 2010, March 14-19, 2010 in Bamberg, Germany, prihlásený.

Publikácie:

- Rakhmatullin A., Šimko F., Bessada C.: High-temperature NMR investigation of the molten fluoride salts based on RbF, as potential coolants in reactors of IV generation. v príprave.

Projekty národných agentúr

Programy: VEGA

1.) Fluoridové taveniny pre vysokoteplotné aplikácie (Fluoride melts for high temperature applications)

Zodpovedný riešiteľ: Miroslav Boča
Trvanie projektu: 1.1.2009 / 31.12.2011
Evidenčné číslo projektu: 2/0058/09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV – 7739 €

Dosiahnuté výsledky:

Projekt bol riešený prvým rokom a jeho zameraním bolo štúdium fyzikálno-chemických a termodynamických vlastností fluoridových taveninových sústav dôležitých z hľadiska chladiacich a teplotransportných systémov pre vysokoteplotné aplikácie. Bol nameraný fázový diagram sústavy $\text{FLiNaK-K}_2\text{ZrF}_6$, pričom teploty primárnych kryštalizácií sú nevyhnutné pre stanovenie ostatných fyzikálnochemických parametrov. Výsledky budú do odborných publikácií spracované v nasledujúcom roku.

2.) Fluorescenčné hybridné materiály organických farbív interkalovaných v anorganických nosičoch s vrstevnatou štruktúrou (Fluorescent hybrid materials based on organic dyes intercalated in layered inorganic carriers)

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1. 1. 2009 / 31. 12. 2012
Evidenčné číslo projektu: 2/0089/09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV – 10725 €

Dosiahnuté výsledky:

V prvom roku riešenia projektu boli práce zamerané na pilotné experimenty testujúce vhodnosť rôznych metód a

postupov prípravy fotochemicky aktívnych hybridných filmov na báze anorganického nosiča a organických farbív. Spúbnými sa ukázali niektoré metódy chemickej predmodifikácie nosiča, napríklad alkylammónymi kationmi s rôznou dĺžkou reťazca, ako aj metódy prípravy definovaných filmov tzv. metódou „layer-by-layer“.

3.) Vzťahy chemických premien a fyzikálno-mechanických vlastností vybraných materiálov na báze cementu (*Relations of chemical changes and physico-mechanical properties of selected materials based on cement*)

Zodpovedný riešiteľ: Milan Drábik
Trvanie projektu: 1. 1. 2008 / 31. 12. 2010
Evidenčné číslo projektu: 2/0055/08
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 – Slovensko: 1
Čerpané financie: SAV – 4784 €

Dosiahnuté výsledky:

Výsledky sú uvedené v publikáciách:

- Drábik M.: Contribution of materials chemistry to the knowledge of macro-defect-free (MDF) materials. Pure and Applied Chemistry, 2009, **81**, 1413-1421.
- Šnircová S., Jóna E., Lajdová L., Jorík V., Drábik M., Pajtášová M., Onduršová D., Mojumdar S.C.: Ni-exchanged montmorillonite with methyl-, dimethyl- and trimethylamine properties. Journal of Thermal Analysis and Calorimetry, 2009, **96**, 63-66.
- Šnircová S., Jóna E., Lajdová L., Janík R., Pajtášová M., Onduršová D., Drábik M., Chromčíková M.: Solid – gas intercalation of some alkylamines into layered silicates. In XXII. International Conferences on Coordination and Bioinorganic Chemistry. 2009, SR, Smolenice. p. 366-373.
- Balkovic S., Živica V., Drábik M.: Síranové poškodenie betónu, 6. seminár Sanácia betónových konštrukcií, Smolenice, 2009, pp.60-64.
- Drábik M., Balkovic S., Gáliková L.: Modelové MDF materiály, dlhodobé testy vplyvu voľného uloženia; VIII. odborná konferencia MALTOVINY 2009, Brno, 2009, pp. 17-24,

4.) Sklené a sklokeramické materiály na báze aluminátov vzácnych zemín s výnimočnými mechanickými a optickými vlastnosťami (*Glass and glass-ceramic rare-earth aluminate materials with exceptional mechanical and optical properties*)

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1. 1. 2009 / 31. 12. 2011
Evidenčné číslo projektu: 1/0603/09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV – 6105 €

Dosiahnuté výsledky:

- Razavi Hesabi Z., Haghighatzadeh M., Mazaheri M., Galusek D., Sadrnezhad S.K.: Suppression of grain growth in sub-micrometer alumina via two-step sintering method, Journal of the European Ceramic Society, 2009, **29**, 1371-1377.
- Michálková M., Ghillányová K., Galusek D.: The influence of solid loading in suspensions of a submicrometric alumina powder on green and sintered pressure filtrated samples, Ceramics International, 2010, **36**, 385-390.
- Ghillányová K., Michálková M., Galusek D., Šajgalík P.: The comparison of two consolidation techniques with respect to final density and microstructure of a submicrometre alumina ceramics, Proc. of the VIIIth Int. Conf. Preparation of Ceramic Materials, Herľany, June 9-11, 2009, pp. 55 – 59.
- Piatriková A., Prnová A., Karell R., Galusek D.: Preparation and properties of lanthanum-aluminate glasses, Proc. of the VIIIth Int. Conf. Preparation of Ceramic Materials, Herľany, June 9-11, 2009, pp. 174 – 175.

- Prnová A., Karell R., Galusek D.: Structure and phase composition of yttrium-aluminate microspheres, Proc. of the VIIIth Int. Conf. Preparation of Ceramic Materials, Herľany, June 9-11, 2009, pp. 172 – 173.
- Michálková M., Ghillányová K., Galusek D.: Sinterability of submicrometre aluminas prepared by pressure filtration followed by CIP, Proc. of the 11th International Conference and Exhibition of the European Ceramics Society, Krakow, Poland, June 21 – 25, 2009. On CD ROM
- Prnová, R. Karell, D. Galusek, I. Vávra, Preparation and characterisation of Al₂O₃-Y₂O₃ glass microspheres, Proc. of the 7th International Conference on Measurement, Measurement 2009, Congress Centre of SAS, Smolenice Castle, Slovakia, May 20 -23, 2009, pp. 418 – 421.

5.) Štruktúra a vlastnosti oxidových skiel - termodynamické modely, vibračná spektroskopia a molekulová dynamika (*Structure and properties of oxide glasses - thermodynamic models, vibrational spectroscopy and molecular dynamics*)

Zodpovedný riešiteľ: Mária Chromčíková
Trvanie projektu: 1. 1. 2009 / 31. 12. 2011
Evidenčné číslo projektu: 1/0330/09
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV – 3227 €

Dosiahnuté výsledky:

- Chromčíková M., Liška M., Chocholoušek J.: Structural relaxation of barium crystal glass. Ceramics – Silikáty, 2009, **53**, 184-186.
- Karell R., Liška M., Chromčíková M.: Configurational entropy of selected zirconia containing silicate glasses. Ceramics-Silikáty, 2009, **53**, 55-58.
- Kraxner J., Liška M., Klement R., Chromčíková M.: Surface tension of borosilicate melts with the composition close to the E-glass. Ceramics-Silikáty, 2009, **53**, 141-143.
- Macháček J., Gedeon O., Liška M.: Elastic properties of soda-lime silica glass from first principles. Ceramics-Silikáty, 2009, **53**, 137-140.
- Perichta P., Liška M., Macháček J., Gedeon O.: MD structural study of 23Y₂O₃-77Al₂O₃ and 23LA₂O₃-77Al₂O₃ glasses. Ceramics-Silikáty, 2009, **53**, 52-54.
- Gašpáreková E., Karell R., Chromčíková M., Liška M.: Physical properties of selected zirconia containing silicate glasses. Preparation of ceramic materials : Proceedings of 8th international conference. Košice, Technical university, 2009. p. 121-126.
- Chromčíková M., Karell R., Gašpáreková E., Liška M.: Thermomechanical analysis of selected Na₂O-K₂O-CaO-ZnO₂-ZrO₂-SiO₂ glasses. .Mezinárodní slovenský a český kalorimetrický seminář, Terchová, 21-24, 2009 - zborník, prednáška
- Chromčíková M., Karell R., Gašpáreková E., Liška M.: Viscosity of selected zirconia containing silicate glasses. VIII. seminár Príprava keramických materiálov, str. 166-167, Herľany, 2009 Zborník, poster
- Karell R., Liška M. Chromčíková M., Gašpáreková E.: Termodynamický model závislosti fyzikálnych vlastností vybraných zirkoničtano-kremičitanových skiel od zloženia. Preparation of ceramic materials : Proceedings of 8th international conference. Košice, Technická univerzita, p. 115-120, 2009.
- Kraxner J., Liška M., Klement R., Chromčíková M.: Surface tension of E-galss melts. VIII. seminár Príprava keramických materiálov, str. 164-165, Herľany, 2009 Zborník, poster

6.) Keramické kompozity s netradičnými spekáciami a mikroštruktúru ovplyvňujúcimi prísadami (*Ceramic composites with uncommon sintering and microstructure forming additives*)

Zodpovedný riešiteľ: Zoltán Lenčేశ
Trvanie projektu: 1. 1. 2007 / 31. 12. 2009
Evidenčné číslo projektu: 2/7171/27
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 0

inštitúcií:

Čerpané financie: SAV – 12523 €

Dosiahnuté výsledky:

Ciele projektu boli splnené. V rámci projektu sa podarilo pripraviť sériu hutných keramických materiálov za použitia rôznych, mikroštruktúru ovplyvňujúcich, netradičných spekácií prísad. Tieto materiály boli ocharakterizované z hľadiska ich mechanických a fyzikálnych vlastností.

Výsledky sú zhrnuté v publikáciách:

- Galusková D., Šajgalík P., Galusek D., Hnatko M.: Corrosion of alumina ceramics in an aqueous solution of sodium chloride. Key Engineering Materials, 2009, **413**, 283-286.
- Kovalčíková A., Dusza J., Šajgalík P.: Thermal shock resistance and fracture toughness of liquid-phase-sintered SiC-based ceramics. Journal of the European Ceramic Society, 2009, **29**, 2387-2394.
- Plachký T., Křest'an J., Korenko M., Lenč'š Z., Šajgalík P.: Corrosion of β -sialon in molten aluminium, cryolite and NaCl-KCl mixture. Key Engineering Materials, 2009, **403**, 133-134.
- Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Fracture toughness of Si₃N₄ based ceramics with rare-earth oxide sintering additives. Key Engineering Materials, 2009, **409**, 377-381.
- Lofaj F., Čopan P., Hnatko M.: Indentation strength and fractography of silica bonded porous silicon nitride. In FRAKTOGRAFIA 2009: Proceedings of The Conference with International participation held in the hotel Academia, the High Tatras, Slovakia, November 8-11, 2009, s. 67-74.
- Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Fractography of rare-earth doped silicon nitride based ceramics. In FRAKTOGRAFIA 2009: Proceedings of The Conference with International participation held in the hotel Academia, the High Tatras, Slovakia, November 8-11, 2009, s. 277-282.

7.) Chemické modifikácie povrchov prírodných nanomateriálov (*Chemical modifications of the natural nanomaterials surfaces*)

Zodpovedný riešiteľ: Jana Madejová

Trvanie projektu: 1. 1. 2009 / 31. 12. 2012

Evidenčné číslo projektu: 2/0183/09

Organizácia je áno

koordinátorom projektu:

Koordinátor: Ústav anorganickej chémie SAV

Počet spoluriešiteľských 0

inštitúcií:

Čerpané financie: SAV – 8724 €

Dosiahnuté výsledky:

Jemné frakcie ($< 2 \mu\text{m}$) ílových hornín, vybrané ako východiskové materiály pre riešenie projektu, boli charakterizované pomocou rôznych fyzikálno-chemických metód. Z bentonitu Jelšový Potok boli pripravené homokatiónové formy, ktoré sa využijú pri štúdiu interakcií ílový minerál-voda. Začali sa dlhodobé experimenty zamerané na sledovanie stability slovenských bentonitov v mierne kyslých a alkalických roztokoch. Experimenty prebiehajú pri izbovej teplote v roztokoch HCl a NaOH a budú sa vyhodnocovať v intervaloch až do 45 mesiacov. Toto je rozhodujúce pre ich využitie ako tesniacich materiálov v skládkach odpadov. Sledoval sa vplyv chemického zloženia a schopnosti napučiavať na rýchlosť rozpúšťania dioktaedrických smektitov v HCl. Zistilo sa, že chemické zloženie minerálu má väčší vplyv na rýchlosť rozpúšťania ako jeho expandabilita. Výsledky boli prezentované na XIV medzinárodnej ílovej konferencii v Taliansku a sú prijaté na publikovanie:

Publikácie

- Pentrák M., Madejová J., Komadel P.: Effect of chemical composition and swelling on acid dissolution of 2:1 clay minerals. *Philosophical Magazine*. V tlači

8.) Od detailného poznania elektrónovej štruktúry molekúl k návrhu nových materiálov. (*From detailed knowledge of the electron structure of molecules to the design of new materials*)

Zodpovedný riešiteľ: Oľga Malkin

Trvanie projektu: 1. 1. 2009 / 31. 12. 2012

Evidenčné číslo projektu: 2/0079/09

Organizácia je áno

koordinátorom projektu:

Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 – Slovensko: 1
Čerpané financie: SAV – 19975 €

Dosiahnuté výsledky:

Pozvané prednášky na konferenciách

- Malkin V.: Fully relativistic calculations of NMR and EPR parameters in the framework of the matrix Dirac-Kohn-Sham equation. In: The 3rd Japan-Czech-Slovak symposium on Theoretical and Computational Chemistry. Bratislava, Slovensko, 2009
- Malkin V.: Relativistic four-component calculations of NMR and EPR parameters. In: Central European Symposium on Theoretical Chemistry. Dobogókő, Maďarsko, 2009

9.) Štúdium štruktúry a dynamiky vodíkových väzieb v tuhých látkach difrakčnými metódami, metódami kvantovej chémie a neelastickou neutrónovou spektroskopiou /INS/ (Structure and dynamics of hydrogen bonds in solids by diffraction methods, quantum chemistry and inelastic neutron spectroscopy (INS))

Zodpovedný riešiteľ: Ľubomír Smrček
Trvanie projektu: 1. 1. 2009 / 31. 12. 2011
Evidenčné číslo projektu: 2/0150/09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV – 3096 €

Dosiahnuté výsledky:

Boli analyzované niektoré kryštálové štruktúry z hľadiska vodíkových väzieb a interpretované neelastické spektrum prírodnej sludy, muskovitu.

10.) Správanie sa nečistôt v priemyselných kyslých elektrolytoch na výrobu hliníka (The behaviour of impurities in industrial acid electrolytes for aluminium production)

Zodpovedný riešiteľ: František Šimko
Trvanie projektu: 1. 1. 2007 / 31. 12. 2009
Evidenčné číslo projektu: 2/7077/27
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 4 – Francúzsko: 2, Rusko: 2
Čerpané financie: SAV – 3824 €

Dosiahnuté výsledky:

Projekt bol zameraný na štúdium správania sa nečistôt Fe, V a P v elektrolytoch, ktoré sa približujú reálnym podmienkam priemyselnej výroby hliníka Hallovým-Héroultovým spôsobom. Uskutočnili sa merania fázových rovnováh, hustoty a povrchového napätia kyslých elektrolytov s určenými zlúčeninami nečistôt, a to FeF₃, FeO, AlPO₄ a NaVO₃, ako aj iónová štruktúra týchto sústav pomocou dostupných analytických metód. Výsledky štúdia správania sa zlúčenín nečistôt v elektrolytoch blízkeho technologického praxi napomôžu k lepšiemu pochopeniu priebehu dejov v reálnych technologických podmienkach, čím môžu výraznou mierou prispieť k rozšíreniu poznatkov o ich správaní sa v procese elektrolýzy hliníka.

Publikácie:

- Šimko F. and Staš M.: Material Balance of Silicon in Aluminum Reduction Cells, *Canadian Metallurgical Quarterly*, 2009, **48**, 109-114.
- Smrček Ľ., Kucharík M., Tovar M., and Žižák I.: High temperature powder diffraction and solid state DFT study of

β -cryolite (Na_3AlF_6). *Cryst. Res. Technol.* 2009, **44**, 834 – 840.

- Chrenková M., Silný A., Šimko F. and Thonstad J.: Density of Low Melting Electrolytes of the system: (50 mol% NaAlF_4 + 50 mol% KAlF_4) + alumina saturated. *Journal of Chemical and Engineering Data*, zaslané
- Šimko F., Macková I., Netriová Z., Kucharík M., and Priščák J.: Density of the systems $\text{NaF} + \text{AlF}_3 + \text{AlPO}_4$ and $\text{NaF} + \text{AlF}_3 + \text{NaVO}_3$. *Journal of Chemical and Engineering Data*, zaslané

Programy: APVV

11.) Moderné využitie fluoridových tavenín (Modern application of fluoride molten salts)

Zodpovedný riešiteľ: Miroslav Boča
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0345-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 6626 €

Dosiahnuté výsledky:

Začiatok riešenia projektu bol v septembri 2009. Boli namerané teploty termálnych efektov v sústave $\text{FLiNaK-K}_2\text{ZrF}_6$, ktoré boli priebežne spracovávané a vyhodnotené. Tieto experimentálne hodnoty budú podkladom pre ďalšie skúmanie študovanej sústavy z hľadiska ostatných fyzikálnochemických vlastností i korózných testov.

12.) Štúdium potenciálu fluoridových tavenín pre vysokoteplotné aplikácie (A study of the potential of fluoride molten salts for high temperature applications)

Zodpovedný riešiteľ: Miroslav Boča
Trvanie projektu: 1. 9. 2009 / 31. 8. 2013
Evidenčné číslo projektu: LPP-0344-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 7798 €

Dosiahnuté výsledky:

Vzhľadom na začiatok riešenia projektu (september 2009) sa doposiaľ zabezpečil nákup potrebných, ale vysoko špecifických chemikálií (Na_2ZrF_6 , LiF , NaF , KF) i špeciálnych materiálov (Zry-2, E110, Zr).

13.) Anizotropný prenos energie v hybridných nanomateriáloch vrstevnatých kremičitanov s organickými farbivami (Anisotropical energy transfer in hybrid nanomaterials based on layered silicates with organic dyes)

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1. 3. 2006 / 30. 9. 2009
Evidenčné číslo projektu: APVV-51-027405
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 – Česko: 1, Japonsko: 1

Čerpané financie: APVV – 6639 €

Dosiahnuté výsledky: Neradiačný medzimolekulový prenos energie rôznych chromofórov bol študovaný v hybridných materiáloch na báze vrstevnatých kremičitanov a organických farbív v koloidných sústavách ako aj tuhých látkach. Na dosiahnutie čiastkových cieľov bola potrebná podrobná charakterizácia interakcie anorganických nosičov s farbivami. Študoval sa vplyv vlastností nosiča, najmä náboja vrstiev, štruktúry hybridných materiálov, najmä interkalovanej fázy molekúl farbív a spektrálne vlastnosti vzniknutých systémov. Pripravili sa systémy, ktoré vykazovali efektívnu absorpciu žiarenia a pomocou prenosu energie následnú selektívnu emisiu len z molekúl predstavujúcich akceptor energie. Dokázalo sa, že pri vhodnej voľbe fotoaktívnej zložky môže prenos energie slúžiť na aktiváciu molekulového kyslíka, a potvrdili sa širokospektrálne antimikrobiálne a dezinfekčné vlastnosti takýchto hybridných materiálov. Vypracovali sa postupy pre prípravu trojzložkových nanokompozitov, v ktorých jednotlivé zložky predstavujú maticu polyméru s časticami kremičitanu, ktoré sú nosičom fotoaktívnych organických molekúl farbív.

Publikácie:

- Czimerová A., Čeklovský A., Bujdák J.: Interaction of montmorillonite with phenothiazine dyes and pyronin in aqueous dispersions: A visible spectroscopy study. *Central European Journal of Chemistry*, 2009, **7**, 343 – 353.
- Bujdák J., Iyi N.: Optical properties of molecular aggregates of oxazine dyes in dispersions of clay minerals, *Colloid and Polymer Science*, 2009, **287**, 157 – 165.
- Bujdák J., Jurečková J., Bujdáková H., Lang K., Šeršeň F.: Clay mineral particles as efficient carriers of methylene blue used for antimicrobial treatment. *Environmental Science & Technology*, 2009, **43**, 6202 – 6207.
- Čeklovský A., Czimerová A., Lang K., Bujdák J.: Layered silicate films with photochemically active porphyrin cations, *Pure and Applied Chemistry*, 2009, **81**, 1385 – 1396.
- Čeklovský A., Czimerová A., Lang K., Bujdák J.: Effect of the layer charge on the interaction of porphyrin dyes in layered silicates dispersions. *Journal of Luminescence*, 2009, **129**, 912 – 918.

14.) Korundová elektrokeramika pre pokročilé typy plazmových zdrojov (Alumina-based electroceramics for advanced plasma sources)

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1. 1. 2007 / 31. 12. 2009
Evidenčné číslo projektu: APVV 0485-06
Organizácia je koordinátorom projektu: nie
Koordinátor: Fakulta matematiky, fyziky a informatiky Univerzity Komenského
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 14473 €

Dosiahnuté výsledky:

- Chovanec J., Kraxner J., Švančárek P., Galusek D.: Optimisation of water-based submicrometre alumina slurries for tape casting, *Proc. of the 8th Int. Conf. Preparation of Ceramic Materials*, Herľany, June 9-11, 2009, pp. 49 – 54.
- Micháľková M., Ghillányová K., Galusek D.: Sinterability of submicrometre aluminas prepared by pressure filtration followed by CIP, *Proc. of the 11th International Conference and Exhibition of the European Ceramics Society*, Krakow, Poland, June 21 – 25, 2009. On CD ROM

15.) Keramické kompozity s perkolujúcimi fázami pripravené infiltráciou organokovového prekursoru (Ceramic composites with percolated phases prepared by infiltration with organometallic precursors)

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0297-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 10852 €

Dosiahnuté výsledky: Zatiaľ žiadne, projekt beží ešte len tri mesiace

16.) Sklené a sklokeramické materiály na báze aluminátov vzácnych zemín (Glasses and glass ceramics based on rare earth aluminates)

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0133-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 5587 €

Dosiahnuté výsledky:

Zatiaľ žiadne, projekt beží ešte len tri mesiace

17.) Korešpondenčné semináre z chémie a biológie pre stredné školy a seminár z prírodných vied pre základné školy (Correspondence seminars from chemistry and biology for secondary schools and seminar of natural sciences for elementary schools)

Zodpovedný riešiteľ: Stanislav Kedžuch
Trvanie projektu: 1. 9. 2009 / 31. 8. 2013
Evidenčné číslo projektu: LPP-0277-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 3879 €

Dosiahnuté výsledky:

K 8.12.2009 zaregistrovaných 3422 žiakov základných škôl do ešte neukončeného 1.kola Korešpondenčného seminára z prírodných vied pre základné školy.

18.) Organické modifikácie prírodných nanomateriálov (Organic modifications of natural nanomaterials)

Zodpovedný riešiteľ: Peter Komadel
Trvanie projektu: 1. 5. 2006 / 30. 4. 2009
Evidenčné číslo projektu: APVV-51-050505
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 10091 €

Dosiahnuté výsledky:

V poslednom roku riešenia projektu sa študovala stabilita organoílov v HCl, vytvoril sa testovací model vermikulitu interkalovaného Mg^{2+} a tetrametylamónnymi kationmi a analyzovali sa geometrické parametre, vodíkové väzby a príslušné vibračné módy interkalovaných vermikulitov. Sledovala sa adsorpcia aromatických uhlíkovodíkov a niektorých priemyselných farbív z ich vodných roztokov na vápenatú formu montmorillonitov. IČ spektroskopia v strednej a blízkej oblasti sa využila na charakterizáciu jednotlivých stupňov syntézy pórových ílových materiálov pripravených zo syntetického trioktaedrického hectoritu modifikovaného hexadecyltrimetylamónnymi kationmi. Série organoílov sa testovali jednak reologickými postupmi a jednak v dvoch polymérnych matriciach, t.j. styrén-butadiénový kaučuk a polykaprolaktón. Účinnosť modifikácie bola rôzna, najlepšie výsledky z pohľadu stužujúceho efektu sa dosiahli pre

kaučuk pri použití dlhých a viacnásobných alifatických ligandov.

Výsledky získané pri riešení projektu sú publikované v prácach:

- Madejová J., Pálková H., Pentrák M., Komadel P.: Near-infrared spectroscopic analysis of acid-treated organo-clays. *Clays and Clay Minerals*, 2009, **57**, 392-403.
- Carrado K.A., Komadel P.: Acid activation of bentonites and polymer-clay nanocomposites. *Elements*, 2009, **5**, 111-116.
- Scholtzová E., Smrčok L.: Hydrogen bonding and vibrational spectra in kaolinite-dimethylsulfoxide – dimethylselenoxide intercalates – a solid-state computational study. *Clays and Clay Minerals*, 2009, **57**, 54-71.
- Pálková H., Madejová J., Komadel P.: Effect of layer charge and exchangeable cations on sorption of biphenyl on montmorillonites. *Central European Journal of Chemistry*, 2009, **7**, 494-504.
- Pálková H., Madejová J., Zimowska M., Serwicka E.M.: Laponite-derived porous clay heterostructures: II. FTIR study of the structure evolution. *Microporous and Mesoporous Materials*, 2010, **127**, 237-244.
- Hrachová J., Komadel P., Chodák I.: Natural rubber (nano)composites with organo-modified bentonite. *Clays and Clay Minerals*, 2009, **57**, 444-451.
- Hrachová J., Chodák I., Komadel P.: Modification and characterization of montmorillonite fillers used in composites with vulcanized natural rubber. *Chemical Papers*, 2009, **63**, 55-61.

19.) Výskumno-vzdelávacie centrum excelentnosti pre výskum pevnej fázy so zameraním na nanomateriály, environmentálnu mineralógiu a materiálovú technológiu (Research and education centre of excellence for solid phase research focused on nanomaterials, environmental mineralogy and material science)

Zodpovedný riešiteľ: Peter Komadel
Trvanie projektu: 1. 7. 2008 / 30. 6. 2011
Evidenčné číslo projektu: VVCE-0033-07
Organizácia je koordinátorom projektu: nie
Koordinátor: Prírodovedecká fakulta UK Bratislava
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 26422 €

Dosiahnuté výsledky:

FTIR spektrometer Nicolet 6700, zakúpený v prvej etape projektu, sa začal intenzívne využívať pri výskume tuhej fázy na mikro– a nano- úrovni a to v týchto hlavných odvetviach výskumu – riešenie environmentálnych záťaží a udržateľnej ťažby nerastných surovín, štúdium nanomateriálov a materiálové technológie. Výsledky získané s pomocou FTIR spektrometra sú/budú publikované v prácach:

- Pentrák M., Madejová J., Komadel P.: Effect of chemical composition and swelling on acid dissolution of 2:1 clay minerals. *Philosophical Magazine*. V tlači.
- Madejová J., Balan E., Petit S.: Application of vibrational spectroscopy to the characterization of phyllosilicates and other industrial minerals. In G. Christidis (editor) *EMU notes in mineralogy. Advances in the characterization of industrial minerals*. Mineralogical Society, 2010
- Madejová J., Pálková H., Komadel P.: IR spectroscopy of clay minerals and clay nanocomposites. In J. Yarwood (editor) *Spectroscopic Properties of Inorganic and Organometallic Compounds*, Volume **41**, 2010.

20.) Príprava a vlastnosti montmorillonitov modifikovaných organickými látkami a ich aplikácie v il-polymérnych nanokompozitoch (Preparation and properties of montmorillonites modified with organic substances and their applications in clay-polymer nanocomposites)

Zodpovedný riešiteľ: Peter Komadel
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0372-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0

Čerpané financie: APVV – 5237 €

Dosiahnuté výsledky:

Komerčný produkt firmy Envigeo a.s., predávaný s označením natrifikovaný bentonit S130, sa použil v polymérnych kompozitoch s kaučukovou maticou vo funkcii stužujúceho plniva. Predbežné výsledky poukazujú na to, že natrifikácia bentonitu vedie k výraznému zlepšeniu mechanických vlastností prírodného kaučuku najmä v kombinácii uvedeného bentonitu s SiO₂, konvenčným plnivom v gumárenskom priemysle.

21.) Keramické progresívne materiály foto-termicko-mechanickej konverznej sústavy solárneho tepelného motora na báze parného cyklu (*Advanced ceramic materials for the photo-thermo-mechanical conversion system of solar thermal engine based on the steam cycle.*)

Zodpovedný riešiteľ: Zoltán Lenčేశ
Trvanie projektu: 1. 2. 2007 / 31. 12. 2009
Evidenčné číslo projektu: APVV-0448-06
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 34559 €

Dosiahnuté výsledky:

Ciele projektu boli v plnej miere splnené, podarilo sa pripraviť keramickú súčiastku pre keramický motor s definovaným tvarom a pórovitosťou. Materiál bol ocharakterizovaný z hľadiska chemickej aj mechanickej odolnosti.

Výsledky projektu sú zhrnuté v publikáciách:

- Plachký T., Křest'an J., Korenko M., Medri V., Lenčేశ Z., Šajgalík P.: Corrosion and oxidation behaviour of beta-SiAlON ceramics via different processing route. *Journal of the Ceramics Society of Japan*, 2009, **117**, 482-488.
- Galusková D., Kašiarová M., Hnatko M., Galusek D., Šajgalík P., Dusza J.: The influence of corrosion in an aqueous solution of NaCl on fracture and strength of various structural ceramics. *Key Engineering Materials*, 2009, **409**, 260-266.
- Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Mechanical properties of Si₃N₄ based ceramics with rare-earth oxide sintering additives. *Powder Metallurgy Progress : Journal of Science and Technology of Particle Materials*, 2008, **8**, 309-314.
- Galusková D., Kašiarová M., Hnatko M., Petrušková V., Galusek D., Šajgalík P., Dusza J. Corrosion of progressive ceramics in aqueous sodium chloride solution. *Preparation of ceramic materials : Proceedings of 8th international conference*, Košice, Technická univerzita, 2009. p. 97-101.
- Kašiarová M., Galusková D., Hnatko M., Galusek D., Šajgalík P., Dusza J.: Fracture and strength of Si₃N₄ corroded in an aqueous solution of sodium chloride. In FRAKTOGRAFIA 2009: Proceedings of The Conference with International participation held in the hotel Academia, the High Tatras, Slovakia, November 8-11, 2009, s. 323-326.

22.) Mikrokogeneračná jednotka na báze spaľovania tuhej biomasy (*Micro-CHP unit based on solid biomass burning*)

Zodpovedný riešiteľ: Zoltán Lenčేశ
Trvanie projektu: 1. 9. 2008 / 31. 12. 2010
Evidenčné číslo projektu: APVV-0517-07
Organizácia je koordinátorom projektu: nie
Koordinátor: Strojnícka fakulta Žilinská univerzita, Žilina
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 14107 €

Dosiahnuté výsledky:

Ciele projektu boli v plnej miere splnené.

Výsledky projektu sú zhrnuté v publikáciách:

- Plachký T., Křest'an J., Korenko M., Medri V., Lenčేశ Z., Šajgalík P.: Corrosion and oxidation behaviour of β-

- SiAlON ceramics via different processing route. *Journal of the Ceramics Society of Japan*, 2009, **117**, 482-488.
- Hegedúsová L., Ceniga L., Dusza J., Hnatko M., Šajgalík P.: Contact strength of monolithic and composite ceramic materials. *Kovové materiály*, 2009, roč. 47, s. 389-399.
 - Galusková D., Kašiarová M., Hnatko M., Galusek D., Šajgalík P., Dusza J.: The influence of corrosion in an aqueous solution of NaCl on fracture and strength of various structural ceramics. *Key Engineering Materials*, 2009, **409**, 260-266.
 - Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Mechanical properties of Si₃N₄ based ceramics with rare-earth oxide sintering additives. *Powder Metallurgy Progress : Journal of Science and Technology of Particle Materials*, 2008, **8**, 309-314.
 - Galusková D., Kašiarová M., Hnatko M., Petrušková V., Galusek D., Šajgalík P., Dusza J. Corrosion of progressive ceramics in aqueous sodium chloride solution. Preparation of ceramic materials : Proceedings of 8th international conference, Košice, Technická univerzita, 2009. p. 97-101.
 - Ghillányová K., Michálková M., Galusek D., Šajgalík P.: The comparison of two consolidation techniques with respect to final density and microstructure of submicrometre alumina ceramics. Preparation of ceramic materials: *Proceedings of 8th international conference*. Košice, Technická univerzita, 2009, p. 55-59.

23.) *Magnetoaktivita, elektroaktivita a fotoaktivita koordinačných zlúčenín (Magnetoactivity, electroactivity and photoactivity of coordination compounds)*

Zodpovedný riešiteľ: Oľga Malkin
Trvanie projektu: 1. 7. 2008 / 30. 6. 2011
Evidenčné číslo projektu: VVCE-0004-07
Organizácia je koordinátorom projektu: nie
Koordinátor: Fakulta chemickej a potravinárskej technológie STU
Počet spoluriešiteľských inštitúcií: 2 – Slovensko: 2
Čerpané financie: APVV – 16597 €

Dosiahnuté výsledky:

Publikácie:

- Repiský M., Komorovský S., Malkina O., Malkin V.: Restricted magnetically balanced basis applied for relativistic calculations of indirect nuclear spin-spin coupling tensors in the matrix Dirac-Kohn-Sham framework. *Chemical Physics*, 2009, **356**, 236-242.
- Hrobárik P., Malkina O., Malkin V., Kaupp M.: Relativistic two-component calculations of electronic g-tensor for oxo-molybdenum(V) and oxo-tungsten(V) complexes: The important role of higher-order spin-orbit contributions. *Chemical Physics*, 2009, **356**, 229-235.

Prednášky:

- Malkin V.: Fully relativistic calculations of NMR and EPR parameters in the framework of the matrix Dirac-Kohn-Sham equation. In: The 3rd Japan-Czech-Slovak symposium on Theoretical and Computational Chemistry. Bratislava, Slovensko, 2009
- Malkin V.: Relativistic four-component calculations of NMR and EPR parameters. In: Central European Symposium on Theoretical Chemistry. Dobogókő, Maďarsko, 2009
- Malkin O.: Interpretation of NMR spin-spin couplings: methodology and examples. In: Central European NMR Meeting. Valtice, Česká Republika, 2009

24.) *Relativistické výpočty NMR a EPR parametrov: od čísel k pochopeniu podstaty (Relativistic calculations of NMR and EPR parameters: from numbers to insight)*

Zodpovedný riešiteľ: Oľga Malkin
Trvanie projektu: 1. 9. 2009 / 31. 8. 2013
Evidenčné číslo projektu: LPP-0326-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 6917 €

Dosiahnuté výsledky:

Malkin O.: Interpretation of NMR spin-spin couplings: methodology and examples. In: Central European NMR Meeting. Valtice, Česká Republika, 2009

25.) K lepšej presnosti v relativistických výpočtoch elektrónovej štruktúry a magneto-rezonančného spektra zlúčenín obsahujúcich ťažké prvky (Towards a higher accuracy in relativistic calculations of electronic structure and magneto-resonance spectra of compounds containing heavy elements)

Zodpovedný riešiteľ: Vladimír Malkin
Trvanie projektu: 1. 1. 2007 / 31. 12. 2009
Evidenčné číslo projektu: APVV-0625-06
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 0
inštitúcií:
Čerpané financie: APVV – 17427 €

Dosiahnuté výsledky:

- Kemper S., Hrobárik P., Kaupp M., and Schlorer N.E.: Jacobsen's Catalyst for Hydrolytic Kinetic Resolution: Structure Elucidation of Paramagnetic Co(III) Salen Complexes in Solution via Combined NMR and Quantum Chemical Studies. *Journal of the American Chemical Society*, 2009, **131**, 4172-4173.
- Komorovský S., Repiský M., Malkina O.L., Malkin V.G.: Fully relativistic calculations of NMR shielding tensors using restricted magnetically balanced basis and Gauge-Including-Atomic-Orbitals, *Journal of Chemical Physics*, zaslané 2009.
- Repiský M., Komorovský S., Malkin E., Malkina O.L., Malkin V.G.: Relativistic four-component calculations of electronic g-tensors in the matrix Dirac-Kohn-Sham framework, *Chem. Phys. Lett.*, zaslané, 2009.

26.) Vlastnosti molekúl s komplikovanou elektrónovou štruktúrou: Sofistikované výpočty a predpovede spektroskopických a elektrických vlastností (Properties of molecules with complicated electronic structure: Sophisticated calculations and predictions of spectroscopic and electric properties)

Zodpovedný riešiteľ: Jozef Noga
Trvanie projektu: 1.3.2006 / 28.2.2009
Evidenčné číslo projektu: P SAV II/1/2007
Organizácia je nie
koordinátorom projektu:
Koordinátor: Univerzita Komenského, Prírodovedecká fakulta
Počet spoluriešiteľských 2 – Slovensko: 2
inštitúcií:
Čerpané financie: 0 €

Dosiahnuté výsledky:

Počas doby projektu v r. 2009 sa rozšírila explicitne korelovaná teória spriahnutých klastrov o zahrnutie jedoelektrónovej relaxácie [J. Noga, J. Šimunek, *Chem. Phys.* **356**, 1-6, 2009] a metóda sa aplikovala pri výpočte protónovej afinity a entalpie tvorby formaldehydu [Czako, B. Nagy, Gy. Tasi, A. Somogyi, J. Simunek, J. Noga, B. J. Braams, J. M. Bowman, and A. G. Csaszar: *Int. J. Quantum Chem.* **109**, 2393-2409, 2009].

27.) Multireferenčná teória spriahnutých klastrov v R12 priblížení. (Multireference explicitly correlated coupled cluster theory within the R12)

Zodpovedný riešiteľ: Jozef Noga
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0343-09

Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 0
inštitúcií:
Čerpané financie: APVV – 5530 €

Dosiahnuté výsledky:

Počas krátkeho trvania projektu v r. 2009 sa v prvom priblížení zaviedla multikonfiguračná BW teória spriahnutých klastrov. [S. Kedžuch, O. Demel, J. Pittner and J. Noga: Multireference R12 Coupled Cluster Theory. "Recent Progress in Coupled Cluster Methods: Theory and Applications", eds. J. Pittner, P. Carsky and J. Paldus, (Springer, Berlin, 2010 in press), 15 p.]

28.) Keramika z polymérnych prekurzorov s kontrolovanou kryštalinitou (Polymer derived nano-ceramic with controlled crystallinity)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 2. 2007 / 31. 12. 2009
Evidenčné číslo projektu: RPEU-0013-06
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 0
inštitúcií:
Čerpané financie: APVV – 16099 €

Dosiahnuté výsledky:

Ciele projektu boli v plnej miere splnené. Výsledky projektu sú zhrnuté v publikáciách:

- Hegedusová L., Kašiarová M., Dusza J., Hnatko M., Šajgalík P.: Mechanical properties of carbon-derived Si_3N_4 +SiC micro/nano-composite. In International Journal of Refractory Metals and Hard Materials, 2009, **27**, 438-442.
- Hegedusová L., Ceniga L., Dusza J., Hnatko M., Šajgalík P.: Contact strength of monolithic and composite ceramic materials. *Kovové materiály*, 2009, roč. 47, s. 389-399.
- Kovalčíková A., Dusza J., Šajgalík P.: Strength degradation flaws in the liquid-phase-sintered SiC based ceramics. *Key Engineering Materials*, 2009, **409**, 350-353.

29.) Výskum keramických materiálov pre vysoko korozívne prostredia (Research of ceramics materials for high corrosive environments)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 2. 2007 / 31. 12. 2009
Evidenčné číslo projektu: APVV-0171-06
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 2 – Slovensko: 2
inštitúcií:
Čerpané financie: APVV – 58023 €

Dosiahnuté výsledky:

Ciele projektu boli v plnej miere splnené. V rámci projektu bolo pripravených množstvo keramických materiálov na báze Si_3N_4 , Al_2O_3 a SiAlONov, ktoré boli ocharakterizované z hľadiska ich koróznej odolnosti voči rôznym koróznym médiám vo forme tavenín pri vysokých teplotách.

Výsledky projektu sú zhrnuté v publikáciách:

- Galusková D., Šajgalík P., Galusek D., Hnatko M.: Corrosion of alumina ceramics in an aqueous solution of sodium chloride. *Key Engineering Materials*, 2009, **413**, 283-286.
- Plachký T., Křest'an J., Korenko M., Lenč'š Z., Šajgalík P.: Corrosion of beta-sialon in molten aluminium, cryolite

- and NaCl-KCl mixture. *Key Engineering Materials*, 2009, **403**, 133-134.
- Plachký T., Křest'an J., Korenko M., Medri V., Lenč'ěš Z., Šajgalík P.: Corrosion and oxidation behaviour of beta-SiAlON ceramics via different processing route. *Journal of the Ceramics Society of Japan*, 2009, **117**, 482-488.
 - Galusková D., Kašiarová M., Hnatko M., Galusek D., Šajgalík P., Dusza J.: The influence of corrosion in an aqueous solution of NaCl on fracture and strength of various structural ceramics. *Key Engineering Materials*, 2009, **409**, 260-266.
 - Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Fracture toughness of Si₃N₄ based ceramics with rare-earth oxide sintering additives. *Key Engineering Materials*, 2009, **409**, 377-381.
 - Galusková D., Kašiarová M., Hnatko M., Petrušková V., Galusek D., Šajgalík P., Dusza J.: Corrosion of progressive ceramics in aqueous sodium chloride solution. *Preparation of ceramic materials : Proceedings of 8th international conference*, Košice, Technická univerzita, 2009, p. 97-101.

30.) Luminiscenčné vlastnosti oxynitridov a nitridov kremíka pripravených z organokovových prekursorov (Luminescence of silicon oxynitrides and nitrides prepared via organometallic precursors)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 9. 2009 / 31. 8. 2012
Evidenčné číslo projektu: LPP-0394-09
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV – 6479 €

Dosiahnuté výsledky:

Ciele projektu sa začali plniť v súlade s harmonogramom jednotlivých etáp. V rámci prvej etapy bola zahájená syntéza SiOC práškov a ich modifikácia s Ln₂O₃. Výsledky projektu nie sú v tomto štádiu ešte publikovateľné, pretože projekt je na začiatku svojho riešenia.

Programy: Štrukturálne fondy EÚ Výskum a vývoj

31.) Centrum pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach (Centre for Materials, Layers and Systems for the Applications and Chemical Processes in the Extreme Environments)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 14. 5. 2009 / 13. 5. 2011
Evidenčné číslo projektu: ITMS kód: 26240120007
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 3 – Slovensko: 3
Čerpané financie: MŠ – 334985 €

Dosiahnuté výsledky:

Cieľom projektu je integrácia excelentných pracovísk so zámerom vybudovať Centrum pre Materiály, vrstvy a systémy pre Aplikácie a Chemické procesy v extrémnych podmienkach – MACHINA, dovybavenie Centra MACHINA špičkovými prístrojmi potrebnými pre realizáciu prebiehajúcich a pripravovaných projektov a kvalitnou informačnou a komunikačnou infraštruktúrou. V prvom roku riešenia projektu sa začali plniť jednotlivé aktivity zamerané najmä na vytvorenie organov centra a na postupný nákup infraštruktúry. Pripravili podklady pre obstaranie prístrojov, konkrétne WD XRF a diamantovej frézy. Nákup diamantovej frézy sa v závere roka 2009 aj realizoval.

32.) Centrum komercializácie poznatkov a ochrany duševného vlastníctva Slovenskej akadémie vied (*Centre for knowledge marketing and intellectual property rights of SAS*)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 9. 2009 / 28. 2. 2012
Evidenčné číslo projektu: ITMS kód:26240220006
Organizácia je koordinátorom projektu: nie
Koordinátor: Ing. Marián Janek, PhD., Technologický inštitút SAV
Počet spoluriešiteľských inštitúcií: 4 - Slovensko: 4
Čerpané financie: 0 €

Dosiahnuté výsledky:

Cieľom projektu je akcelerácia a podpora transferu poznatkov do praxe a komplexného manažmentu duševného vlastníctva organizácií SAV, vybudovanie špecializovanej administratívnej, informačnej a komunikačnej infraštruktúry centra, vytvorenie interného systému riadenia, prenosu a komercializácie duševného vlastníctva a technológií vznikajúcich v prostredí SAV a zapojenie centra do národných aktivít a medzinárodných štruktúr pre technologické transfery a komercializačné aktivity. V roku 2009 sa začali plniť jednotlivé aktivity projektu.

Programy: Centrá excelentnosti SAV

33.) Centrum pokročilej výpočtovej chémie (*Centre for advanced Computational Chemistry*)

Zodpovedný riešiteľ: Jozef Noga
Trvanie projektu: 1. 1. 2007 / 31. 12. 2010
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 5 – Slovensko: 5
Čerpané financie: SAV – 19832 €

Dosiahnuté výsledky:

Odborné výsledky centra za ÚACH SAV sú pokryté projektami J. Nogu, V. Malkina, O. Malkin, a L. Smrčka.

34.) Centrum nanoštruktúrnych materiálov (*Centre of the nanostructured materials*)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1. 1. 2007 / 31. 12. 2010
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: nie
Koordinátor:
Počet spoluriešiteľských inštitúcií: 6 – Slovensko: 6
Čerpané financie: SAV – 4846 €

Dosiahnuté výsledky:

Ciele projektu boli v plnej miere splnené. Výsledky projektu sú zhrnuté v publikáciách:

- Dusza J., Šajgalík P.: Silicon nitride and alumina-based nanocomposites. In *Handbook of nanoceramics and their based nanodevices*. Vol. 2. - Stevenson Ranch, California : American Scientific Publishers, 2009. p. 253-283.
- Kovalčíková A., Dusza J., Šajgalík P.: Thermal shock resistance and fracture toughness of liquid-phase-sintered SiC-based ceramics. *Journal of the European Ceramic Society*, 2009, **29**, 2387-2394.
- Hegedúsová L., Ceniga L., Dusza J., Hnatko M., Šajgalík P.: Contact strength of monolithic and composite ceramic

materials. *Kovové materiály*, 2009, roč. 47, s. 389-399.

- Kovalčíková A., Dusza J., Šajgalík P.: Strength degradation flaws in the liquid-phase-sintered SiC based ceramics. *Key Engineering Materials*, 2009, **409**, 350-353.
- Lofaj F., Čopan P., Hnatko M.: Indentation strength and fractography of silica bonded porous silicon nitride. In FRAKTOGRAFIA 2009: Proceedings of The Conference with International participation held in the hotel Academia, the High Tatras, Slovakia, November 8-11, 2009, s. 67-74.
- Tatarko P., Lojanová Š., Dusza J., Šajgalík P.: Influence of rare-earth sintering additives in Si₃N₄ based nanocomposites. In Nanocon 2009. Rožnov pod Radhoštěm, 20.-22.10.2009. - B.V., 2009, cD.

Programy: Iné projekty

35.) Dlhodobé sledovanie pórobetónu vyrobeného z fluidného popolčeka (The long-term investigation of autoclaved aerated concrete produced from fluid ash)

Zodpovedný riešiteľ: Svetozár Balkovic
Trvanie projektu: 1. 1. 2008 / 31. 12. 2009
Evidenčné číslo projektu:
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských 2 – Slovensko: 2
inštitúcií:
Čerpané financie: PORFIX – 5598 €

Dosiahnuté výsledky:

Získané výsledky boli odovzdané partnerskému PORFIX, a. s. formou expertíznych správ (výsledky priamo relevantné pre uvedenú firmu), časť výsledkov širšieho všeobecného významu je uvedená v publikáciách:

- Balkovic S., Peteja M., Drábik M.: Impact of filler addition on the technological process and properties of autoclaved aerated concrete. In XIIIth International Conference of Research Institute of Building Materials. CR, Telč, 9.6. - 11.6.2009: Ecology and new Building materials and products. - Telč, 2009, P. 108-113.
- Balkovic S.: Šedý pórobeton: zhodnocení odpadových produktů z procesu spalování uhlí. In *Stavebnictví*, 2009, **4**, 34-37.
- Živica V., Drábik M., Balkovic S.: Betón a oheň, 6. seminár Sanácia betónových konštrukcií, Smolenice, 2009, pp.23-29.
- Balkovic S., Peteja M., Drábik M.: Fluidný popolček a strata žíhaním; VIII. odborná konferencie MALTOVINY 2009, Brno, 2009, pp. 1-11.

Príloha C

Publikačná činnosť organizácie

ABC Kapitoly vo vedeckých monografiách vydané v zahraničných vydavateľstvách

- ABC01 BUJDÁK, Juraj - FITZ, D. - RODE, B.M. Mineral-induced peptide formation. In Astrobiology: Emergence, search and detection of life. - Los Angeles : American Scientific Publishers, 2009, P. 238-260. ISBN 1-58883-137-X.
- ABC02 DUSZA, Ján - ŠAJGALÍK, Pavol. Silicon nitride and alumina-based nanocomposites. In Handbook of nanoceramics and their based nanodevices. Vol. 2. - Stevenson Ranch, California : American Scientific Publishers, 2009, p. 253-283. ISBN 1-58883-116-7.
- ABC03 LIŠKA, Marek. Studying structure and thermal properties of oxide glasses. In Some Thermodynamic, Structural and Behavioral Aspects of Materials Accentuating Non-crystalline States. - Plzeň : University of Bohemia, 2009. ISBN 978-80-87269-06-0.

ADCA Vedecké práce v zahraničných karentovaných časopisoch impaktovaných

- ADCA01 BALOG, Miroslav - VRETENÁR, Viliam - VÁVRA, Ivo - ZHANG, J. - CRIMP, M.A. - KUBIČÁR, Ľudovít - LENČEŠ, Zoltán. Thermophysical properties of electrically conductive SiC-(Nb,Ti-C)ss-based cermets. In International Journal of Thermophysics, 2009, vol. 30, no. 6, p. 1918-1930. (0.889 - IF2008). ISSN 0195-928X.
- ADCA02 BUJDÁK, Juraj - IYI, N. Optical properties of molecular aggregates of oxazine dyes in dispersion of clay minerals. In Colloid and Polymer Science, 2009, vol. 287, p. 157-165. (1.736 - IF2008). (2009 - Current Contents). ISSN 0303-402X.
- ADCA03 BUJDÁK, Juraj - JUREČEKOVÁ, J. - BUJDÁKOVÁ, H. - LANG, K. - ŠERŠEŇ, F. Clay mineral particles as efficient carries of methylene blue used for antimicrobial treatment. In Environmental Science and Technology, 2009, vol. 43, no. 16, p. 6202-6207. (4.458 - IF2008).
- ADCA04 CARRADO, K.A. - KOMADEL, Peter. Acid activation of bentonites and polymer-clay nanocomposites. In Elements, 2009, vol. 5, p. 111-116. (3.069 - IF2008).
- ADCA05 CZAKÓ, G. - NAGY, B. - TASI, G. - SOMOGYI, A. - ŠIMUNEK, J. - NOGA, Jozef - BRAAMS, B.J. - BOWMAN, J.M. - CZÁSZÁR, A.G. Proton affinity and enthalpy of formation of formaldehyde. In International Journal of Quantum Chemistry, 2009, vol. 109, p. 2393-2409. (1.317 - IF2008). (2009 - Current Contents). ISSN 0020-7608.
- ADCA06 CZÍMEROVÁ, Adriana - ČEKLOVSKÝ, Alexander - BUJDÁK, Juraj. Interaction of montmorillonite with phenothiazine dyes and pyronin in aqueous dispersions: A visible spectroscopy study. In Central European Journal of Chemistry, 2009, vol. 7, no. 3, p. 343-353. (0.741 - IF2008). ISSN 1895-1066.
- ADCA07 ČEKLOVSKÝ, Alexander - CZÍMEROVÁ, Adriana - LANG, K. - BUJDÁK, Juraj. Effect of the layer charge on the interaction of porphyrin dyes in layered silicates dispersions. In Journal of Luminescence, 2009, vol. 129, p. 912-918. (1.628 - IF2008). ISSN 0022-2313.
- ADCA08 ČEKLOVSKÝ, Alexander - CZÍMEROVÁ, Adriana - LANG, K. - BUJDÁK, Juraj. Layered silicate films with photochemically active porphyrin cations. In Pure and Applied Chemistry, 2009, vol. 81, no. 8, p. 1385-1396. (2.237 - IF2008). ISSN 0033-4545.
- ADCA09 DERZSI, Mariana - PIEKARZ, P. - JOCHYM, P.T. - ŁAZEWSKI, J. - STERNIK, M. - OLEŚ, A.M. - PARLINSKI, K. Effects of Coulomb interaction on the electronic structure and lattice dynamics of the Mott insulator Fe₂SiO₄ spinel. In Physical

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- ADCA10 DRÁBIK, Milan. Contribution of materials to the knowledge of macro-defect-free (MDF) materials. In Pure and Applied Chemistry, 2009, vol. 81, no. 8, p. 1413-1421. (2.237 - IF2008). ISSN 0033-4545.
- ADCA11 HEGEDŮSOVÁ, Lucia - KAŠIAROVÁ, M. - DUSZA, Ján - HNATKO, Miroslav - ŠAJGALÍK, Pavol. Mechanical properties of carbon-derived Si₃N₄+SiC micro/nano-composite. In International Journal of Refractory Metals and Hard Materials, 2009, vol. 27, p. 438-442. (1.221 - IF2008). (2009 - Current Contents). ISSN 0263-4368.
- ADCA12 HESABI, Z.R. - HAGHIGHATZADEH, M. - MAZAHARI, M. - GALUSEK, Dušan - SADRNEZHAAD, S.K. Suppression of grain growth in sub-micrometer alumina via two-step sintering method. In Journal of the European Ceramic Society, 2009, vol. 29, p. 1371-1377. (1.580 - IF2008). (2009 - Current Contents). ISSN 0955-2219.
- ADCA13 HRACHOVÁ, Jana - KOMADEL, Peter - CHODÁK, Ivan. Natural rubber nanocomposites with organo-modified bentonite. In Clays and Clay Minerals, 2009, vol. 57, no. 4, p. 444-451. (1.171 - IF2008). ISSN 0009-8604.
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- ADCA15 CHRAPPOVÁ, J. - SCHWENDT, P. - SIVÁK, M. - REPISKÝ, Michal - MALKIN, Vladimír - MAREK, M. Dinuclear fluoro-peroxovanadium(V), complexes with symmetric and asymmetric peroxo bridges: syntheses, structures and DFT studies. In Dalton Transactions, 2009, vol., p. 465-473. (3.580 - IF2008).
- ADCA16 CHROMČÍKOVÁ, Mária - LIŠKA, Marek - CHOCHOLOUŠEK, J. Structural relaxation of barium crystal glass. In Ceramics-Silikáty, 2009, vol. 53, no. 3, p. 184-186. (0.644 - IF2008). ISSN 0862-5468.
- ADCA17 KARELL, R. - LIŠKA, Marek - CHROMČÍKOVÁ, Mária. Configurational entropy of selected zirconia containing silicate glasses. In Ceramics-Silikáty, 2009, vol. 53, no. 1, p. 55-58. (0.644 - IF2008). ISSN 0862-5468.
- ADCA18 KEMPER, S. - HROBÁRIK, Peter - KAUPP, M. - SCHLÖRER, N.E. Jacobsen's catalyst for hydrolytic kinetic resolution: Structure elucidation of paramagnetic Co(III) salen complexes in solution via combined NMR and quantum chemical studies. In Journal of the American Chemical Society, 2009, vol. 131, p. 4172-4173. (8.091 - IF2008). ISSN 0002-7863.
- ADCA19 KLEMENT, R. - KRAXNER, J. - LIŠKA, Marek. Spectroscopic analysis of iron doped glasses with composition close to the E-glass: A preliminary study. In Ceramics-Silikáty, 2009, vol. 53, no. 3, p. 180-183. (0.644 - IF2008). ISSN 0862-5468.
- ADCA20 KORENKO, Michal - KUCHARÍK, Marián. Využitie roztavených anorganických solí ako chladiacich médií v jadrovej energetike – soľ zeme a svetlo sveta. In Chemické listy, 2009, vol. 103, p. 193-199. (0.593 - IF2008). (2009 - Current Contents). ISSN 0009-2770.
- ADCA21 KOVALČÍKOVÁ, Alexandra - DUSZA, Ján - ŠAJGALÍK, Pavol. Thermal shock resistance and fracture toughness of liquid-phase-sintered SiC-based ceramics. In Journal of the European Ceramic Society, 2009, vol. 29, p. 2387-2394. (1.580 - IF2008). (2009 - Current Contents). ISSN 0955-2219.
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- ADCA24 KUBÍKOVÁ, Blanka - KUCHARÍK, Marián - VASILJEV, Roman - BOČA, Miroslav. Phase equilibria, volume properties, surface tension and viscosity of the (FLiNaK)_{eut} + K₂NbF₇ melts. In Journal of Chemical and Engineering Data, 2009, vol. 54, p. 2081-2084. (2.063 - IF2008).
- ADCA25 LANGER, V. - MACH, P. - SMRČOK, Lubomír - MILATA, V. (E)-methyl 2-[(2-fluorophenyl)aminomethylene]-3-oxobutanoate: X-ray and density functional theory (DFT) study. In Acta Crystallographica Section C.Crystal Structure Communications, 2009, vol. 65, p. 183-185. (0.561 - IF2008). (2009 - Current Contents). ISSN 0108-2701.
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- ADCA28 MACHÁČEK, J. - GEDEON, O. - LIŠKA, Marek. Elastic properties of soda-lime silica glass from first principles. In Ceramics-Silikáty, 2009, vol. 53, no. 2, p. 137-140. (0.644 - IF2008). ISSN 0862-5468.
- ADCA29 NERÁD, Ivan - MIKŠÍKOVÁ, Eva - BALOGOVÁ, Z. Calorimetric study of melts in the system KF - K₂TaF₇. In Central European Journal of Chemistry, 2009, vol. 7, no. 4, p. 774-779. (0.741 - IF2008). ISSN 1895-1066.
- ADCA30 NETRIOVÁ, Zuzana - BOČA, Miroslav - DANIELIK, V. - MIKŠÍKOVÁ, Eva. Phase diagram of the system KF-K₂TaF₇-Ta₂O₅. In Journal of Thermal Analysis and Calorimetry, 2009, vol. 95, no. 1, p. 111-115. (1.630 - IF2008). ISSN 1418-2874.
- ADCA31 NOGA, Jozef - ŠIMUNEK, J. On the one-particle basis set relaxation in R12 based theories. In Chemical Physics, 2009, vol. 356, p. 1-6. (1.961 - IF2008).
- ADCA32 PÁLKOVÁ, Helena - MADEJOVÁ, Jana - KOMADEL, Peter. The effect of layer charge and exchangeable cations on sorption of biphenyl on montmorillonites. In Central European Journal of Chemistry, 2009, vol. 7, no. 3, p. 494-504. (0.741 - IF2008). ISSN 1895-1066.
- ADCA33 PENTRÁK, Martin - MADEJOVÁ, Jana - KOMADEL, Peter. Acid and alkali treatment of kaolins. In Clay Minerals, 2009, vol. 44, p. 511-523. (0.500 - IF2008). ISSN 0009-8558.
- ADCA34 PERICHTA, P. - LIŠKA, Marek - MACHÁČEK, J. - GEDEON, O. MD structural study of 23Y₂O₃-77Al₂O₃ and 23Al₂O₃-77Al₂O₃ glasses. In Ceramics-Silikáty, 2009, vol. 53, no. 1, p. 52-54. (0.644 - IF2008). ISSN 0862-5468.
- ADCA35 PETRUŠKOVÁ, V. - VRÁBEL, P. - LIŠKA, Marek - GALUSKOVÁ, D. - MIŠÍKOVÁ, L. - ŠAJGALÍK, Pavol. Corrosion of barium and barium free crystal glass in a flow-through reactor. In Glass Technology: European Journal of Glass Science and Technology A, 2009, vol. 50, no. 5, p. 258-268. (0.529 - IF2008).
- ADCA36 PIEKARZ, P. - DERZSI, Mariana - JOCHYM, P.T. - ŁAZEWSKI, J. - STERNIK, M. - PARLINSKI, K. - SERWICKA, E.M. Crystal structure, hydrogen bonds and lattice dynamics in kanemite from first-principles calculations. In Physical Review B, 2009, vol. 79, p. 134105-1-134105-8. (3.322 - IF2008). ISSN 1098-0121.
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- ADCA39 RIBEIRO, F.R. - FABRIS, J.D. - KOSTKA, J.E. - KOMADEL, Peter - STUCKI, J.W. Comparisons of structural iron reduction in smectites by bacteria and dithionite: II. A variable-temperature Mössbauer spectroscopic study of Garfield nontronite. In Pure and Applied Chemistry, 2009, vol. 81, no. 8, p. 1499-1509. (2.237 - IF2008). ISSN 0033-4545.
- ADCA40 SCHOLTZOVÁ, Eva - SMRČOK, Ľubomír. Hydrogen bonding and vibrational spectra in kaolinite-dimethylsulfoxide and- dimethylselenoxide intercalates – a solid-state computational study. In Clays and Clay Minerals, 2009, vol. 57, no. 1, p. 54-71. (1.171 - IF2008). ISSN 0009-8604.
- ADCA41 SMRČOK, Ľubomír - HAVLÍČEK, D. - KAMAN, O. - RUNDLÖF, H. 1,4-diazabicyclo[2.2.2]octane-1,4-diium dihydrogen phosphate monohydrate from X-ray and neutron data. In Zeitschrift für Kristallographie, 2009, vol. 224, p. 174-178. (0.708 - IF2008). (2009 - Current Contents). ISSN 0044-2968.
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- ADCA46 ŠUCHA, V. - CZÍMEROVÁ, Adriana - BUJDÁK, Juraj. Surface properties of illite-smectite minerals as detected by interactions with rhodamine 6G dye. In Clays and Clay Minerals, 2009, vol. 57, no. 3, p. 361-370. (1.171 - IF2008). ISSN 0009-8604.

ADDA Vedecké práce v domácich karentovaných časopisoch impaktovaných

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ADDB Vedecké práce v domácich karentovaných časopisoch neimpaktovaných

- ADDB01 HEGEDÜSOVÁ, Lucia - CENIGA, Ladislav - DUSZA, Ján - HNATKO, Miroslav - ŠAJGALÍK, Pavol. Contact strength of monolithic and composite ceramic materials. In *Kovové materiály*, 2009, roč. 47, s. 389-399. (2009 - Current Contents). ISSN 0023-432X.

ADEB Vedecké práce v zahraničných nekarentovaných časopisoch neimpaktovaných

- ADEB01 BUTVIN, Pavol - BUTVINOVÁ, Beata - VLASÁK, Gabriel - DUHAJ, Pavol - CHROMČÍKOVÁ, Mária - LIŠKA, Marek - ILLEKOVÁ, Emília - ŠVEC, Peter. Anisotropic thermal expansion of as-cast RQM ribbons and magnetic anisotropy. In *Journal of Physics: Conference Series*, 2009. Vol. 144, 012101.
- ADEB02 GALUSKOVÁ, Dagmar - KAŠIAROVÁ, M. - HNATKO, Miroslav - GALUSEK, Dušan - ŠAJGALÍK, Pavol - DUSZA, Ján. The influence of corrosion in an aqueous solution of NaCl on fracture and strength of various structural ceramics. In *Key Engineering Materials*, 2009, vol. 409, p. 260-266. ISSN 1013-9826.
- ADEB03 GALUSKOVÁ, D. - ŠAJGALÍK, Pavol - GALUSEK, Dušan - HNATKO, Miroslav. Corrosion of alumina ceramics in an aqueous solution of sodium chloride. In *Key Engineering Materials*, 2009, vol. 413, p. 283-286. ISSN 1013-9826.
- ADEB04 KOVALČÍKOVÁ, Alexandra - DUSZA, Ján - ŠAJGALÍK, Pavol. Strength degradation flaws in the liquid-phase-sintered SiC based ceramics. In *Key Engineering Materials*, 2009, vol. 409, p. 350-353. ISSN 1013-9826.
- ADEB05 PLACHÝ, Tomáš - KŘEŠTAN, J. - KORENKO, Michal - LENČEŠ, Zoltán - ŠAJGALÍK, Pavol. Corrosion of beta-sialon in molten aluminium, cryolite and NaCl-KCl mixture. In *Key Engineering Materials*, 2009, vol. 403, p.133-134. ISSN 1013-9826.
- ADEB06 TATARKO, Peter - LOJANOVÁ, Š. - DUSZA, Ján - ŠAJGALÍK, Pavol. Fracture toughness of Si₃N₄ based ceramics with rare-earth oxide sintering additives. In *Key Engineering Materials*, 2009, vol. 409, p. 377-381. ISSN 1013-9826.

ADFB Vedecké práce v domácich nekarentovaných časopisoch neimpaktovaných

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GII Rôzne publikácie a dokumenty, ktoré nemožno zaradiť do žiadnej z predchádzajúcich kategórií

GII01 MALKIN, Vladimír - MALKINA, Oľga - REVIKINE, R. - ARBUZNIKOV, A.V. - KAUPP, M. - SCHIMMELPFENNIG, B. - MALKIN, I. - RUDD, K. MAG-reSpect (a property block of respect) - molecular electronic structure program. In Software: Magnetic ReSpect program, 2003.

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1063. BRUSCHI, M. - DE GIOIA, L. - MITRIC, R. - BONACIC-KOUTECKY, V. - FANTUCCI, P. *A DFT study of EPR parameters in Cu(II) complexes of the octarepeat region of the prion protein. In PHYSICAL CHEMISTRY CHEMICAL PHYSICS. ISSN 1463-9076, 2008, vol. 10, no. 31, p. 4573-4583., WOS*
1064. CORMINBOEUF, C. - WODRICH, M.D. - KING, R.B. - SCHLEYER, P.V. *Effects of halogen substitution on the properties of eight- and nine-vertex closo-boranes. In DALTON TRANSACTIONS. ISSN 1477-9226, APR 7 2008, no. 13, p. 1745-1751., WOS*
1065. JARDILLIER, N. - GOURSOT, A. *One-electron quantum capping potential for hybrid QM/MM studies of silicate molecules and solids. In CHEMICAL PHYSICS LETTERS. 2008, vol. 454, no. 1-3, p. 65-69., WOS*
1066. PEREZ-PERALTA, N. - SANCHEZ, M. - MARTIN-POLO, J. - ISLAS, R. - VELA, A. - MERINO, G. *Planar tetracoordinate carbons in cyclic semisaturated hydrocarbons. In JOURNAL OF ORGANIC CHEMISTRY. ISSN 0022-3263, SEP 19 2008, vol. 73, no. 18, p. 7037-7044., WOS*

Príloha D

Údaje o pedagogickej činnosti organizácie

Semestrálne prednášky:

RNDr. Milan Drábik, CSc.

Názov semestr. predmetu: Transdisciplinarita anorganickej chémie a chémie materiálov

Počet hodín za týždeň: 2

Počet hodín za semester: 22

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

prof. RNDr. Pavol Šajgalík, DrSc.

Názov semestr. predmetu: Anorganické materiály a technológia ich výroby

Počet hodín za týždeň: 2

Počet hodín za semester: 26

Názov katedry a vysokej školy: Fakulta priemyselných technológií TnUAD v Púchove, Katedra anorganickej chémie

Semestrálne cvičenia:

Mgr. Anna Brtáňová

Názov semestr. predmetu: Všeobecná a anorganická chémia

Počet hodín za týždeň: 6

Počet hodín za semester: 72

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Pokročilé cvičenie z fyzikálnej chémie (1)

Počet hodín za týždeň: 6

Počet hodín za semester: 78

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Špeciálne cvičenie diplomantov (1)

Počet hodín za týždeň: 12

Počet hodín za semester: 156

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

RNDr. Jana Madejová, DrSc.

Názov semestr. predmetu: Špeciálne metódy výskumu nerúd

Počet hodín za týždeň: 0

Počet hodín za semester: 9

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra ložiskovej geológie

Ing. Marcel Pargáč

Názov semestr. predmetu: Laboratórium odboru

Počet hodín za týždeň: 4

Počet hodín za semester: 36

Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Oddelenie anorganickej technológie

Semináre:

Ing. Peter Barborík

Názov semestr. predmetu: Proseminár z anorganickej chémie

Počet hodín za týždeň: 4

Počet hodín za semester: 52

Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Ústav anorganickej chémie, technológie a materiálov

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Fyzikálna chémia (1)

Počet hodín za týždeň: 2

Počet hodín za semester: 26

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Špeciálny seminár (2)

Počet hodín za týždeň: 2

Počet hodín za semester: 26

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Výberový seminár z fyzikálnej chémie (2)

Počet hodín za týždeň: 2

Počet hodín za semester: 26

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Výpočtový seminár z fyzikálnej chémie

Počet hodín za týždeň: 2

Počet hodín za semester: 26

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

Ing. Martin Michálek

Názov semestr. predmetu: Proseminár z anorganickej chémie

Počet hodín za týždeň: 4

Počet hodín za semester: 52

Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Ústav anorganickej chémie

Terénne cvičenia:

Preddiplomová prax:

Individuálne prednášky:

RNDr. Juraj Bujdák, PhD.

Názov semestr. predmetu: Čo je fyzikálna chémia?

Počet hodín za týždeň: 0

Počet hodín za semester: 2

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra fyzikálnej chémie

doc. Ing. Zoltán Lenčేశ, PhD.

Názov semestr. predmetu: Pokročilé anorganické materiály

Počet hodín za týždeň: 0

Počet hodín za semester: 6

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Katedra anorganickej chémie

doc. Ing. Zoltán Lenčేశ, PhD.

Názov semestr. predmetu: Pokročilé anorganické materiály

Počet hodín za týždeň: 0

Počet hodín za semester: 6

Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Ústav anorganickej chémie

doc. Ing. Zoltán Lenčేశ, PhD.

Názov semestr. predmetu: Speciální materiály

Počet hodín za týždeň: 0

Počet hodín za semester: 2

Názov katedry a vysokej školy: Vysoká škola báňská - TU Ostrava, Česká republika, Fakulta metalurgie a materiálového inženýrství

RNDr. Ľubomír Smrček, CSc.

Názov semestr. predmetu: Určovanie dynamiky atómov vodíka pomocou difrakcie neutrónov na kryštáloch a vibračnej spektroskopie založenej na neelastickom rozptyle neutrónov

Počet hodín za týždeň: 0

Počet hodín za semester: 2

Názov katedry a vysokej školy: Fakulta chemickej a potravinárskej technológie STU, Ústav organickej chémie, katalýzy a petrochémie

Príloha E**Medzinárodná mobilita organizácie****(A) Vyslanie vedeckých pracovníkov do zahraničia na základe dohôd:**

Krajina	Druh dohody					
	MAD, KD, VTS		Medziústavná		Ostatné	
	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní
Belgicko					Dušan Galusek	5
					Jozef Chovanec	3
Bielorusko					Svetozár Balkovic	4
Bulharsko	Adriana Czímerová	6			Alexander Čeklovský	6
Česko	Juraj Bujdák	5			Svetozár Balkovic	1
					Svetozár Balkovic	2
					Svetozár Balkovic	2
					Svetozár Balkovic	1
					Svetozár Balkovic	4
					Svetozár Balkovic	2
					Svetozár Balkovic	1
					Miroslav Boča	2
					Juraj Bujdák	2
					Milan Drábik	1
					Dušan Galusek	2
					Dušan Galusek	3
					Mária Chromčíková	4
					Mária Chromčíková	2
					Stanislav Kedžuch	5
					Zoltán Lenčేశ	2
					Zoltán Lenčేశ	2
					Zoltán Lenčేశ	2
					Marek Liška	5
					Marek Liška	2
					Marek Liška	1
					Marek Liška	3
					Marek Liška	2
					Jana Madejová	1
					Jozef Noga	5
					Ľubomír Smrčok	2
					Pavol Šajgalík	2
					Pavol Šajgalík	2
					Pavol Šajgalík	1
					Pavol Šajgalík	2
					Pavol Šajgalík	2
					Pavol Šajgalík	1
					Pavol Šajgalík	2
					František Šimko	2
Francúzsko					Miroslav Boča	3
					Ľubomír Hric	8
					Tomáš Plachký	4
					Ľubomír Smrčok	4
					František Šimko	12

				František Šimko	7
Japonsko	Juraj Bujdák	31			
	Adriana Czímerová	31			
Nemecko				Peter Hrobárik	16
				Stanislav Komorovský	16
				Stanislav Komorovský	15
				Zoltán Lenčేశ	3
				Zoltán Lenčేశ	2
				Oľga Malkin	15
				Oľga Malkin	15
				Vladimír Malkin	15
				Vladimír Malkin	15
				Tomáš Plachký	3
				Tomáš Plachký	3
				Michal Repiský	72
				Pavol Šajgalík	3
				Pavol Šajgalík	2
				Pavol Šajgalík	2
				Pavol Šajgalík	2
				Pavol Šajgalík	2
Poľsko	Svetozár Balkovic	5		Svetozár Balkovic	2
	Helena Pálková	5		Svetozár Balkovic	3
				Milan Drábik	3
				Zoltán Lenčేశ	1
				Helena Pálková	8
Rakúsko				Miroslav Boča	1
				Miroslav Boča	1
				Ľubomír Hric	1
				Ľubomír Hric	1
				Marián Janek	1
				Marián Janek	1
				Marián Janek	1
				Marián Janek	1
				Blanka Kubíková	1
				Zoltán Lenčేశ	1
				Pavol Šajgalík	1
Rusko				Peter Komadel	2
Švajčiarsko				Pavol Šajgalík	2
Švédsko				Dušan Galusek	4
				Eva Scholtzová	10
				Ľubomír Smrčok	10
Taliansko				Dušan Galusek	3
				Peter Šimurka	5
Turecko				Monika Micháľková	4
				Tomáš Plachký	4
Veľká Británia				Milan Drábik	2
				Stanislav Kedžuch	10
Počet	6	83		88	416

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

Krajina	Druh dohody					
	MAD, KD, VTS		Medziústavná		Ostatné	
	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní
Bulharsko	Ivo Grabchev	6				
Česko	Jiří Hybler	7	Eva Káfuňková	2		
			Jan Demel	2		
			Kaplan Kirakci	2		
			Tomáš Grygar	2		
Japonsko	Jun Kawamata	5				
	Kazuko Saito-Fujii	5				
	Yasutaka Suzuki	5				
Poľsko					Wojciech Grochala	1
Rakúsko					Harald Harmuth	8
					Sabine Pichlbauer	48
USA					Pavol Juhás	1
Počet prijatí spolu	5	28	4	8	4	58

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

Krajina	Názov konferencie	Meno pracovníka	Počet dní
Česko	ANM	Linda Kipsová	2
	CUDA-TESLA	Michal Repiský	2
	EBMP	Svetozár Balkovic	3
	ENMR	Oľga Malkin	4
		Vladimír Malkin	4
	Maltoviny	Milan Drábik	1
	MBP	Juraj Bujdák	2
	NJM	Peter Komadel	2
		Jana Madejová	2
	RK	Eva Scholtzová	1
		Ľubomír Smrčok	1
	StNM	Miroslav Boča	3
		František Šimko	3
	TVMM	Miroslav Boča	3
		František Šimko	3
Francúzsko	EFONGA	Jozef Chovanec	6
	GFA	Peter Komadel	3
	ICMHN	Juraj Bujdák	6
Grécko	ICCMSE	Oľga Malkin	8
		Vladimír Malkin	8
		Jozef Noga	8
Kanada	CCGT	Zoltán Lenčes	9
Maďarsko	CESTC	Stanislav Kedžuch	4
		Oľga Malkin	2
		Vladimír Malkin	2
		Štefan Varga	4

	XFEL	Ľubomír Smrčok	3
Nemecko	BESSY	Ľubomír Smrčok	4
	ICNRM	Zoltán Lenčes	4
		Tomáš Plachký	4
		Pavol Šajgalík	4
	NAMMD	Pavol Šajgalík	2
Poľsko	CAC	Ľubomír Smrčok	5
	ECERS	Dušan Galusek	5
		Katarína Ghillányová	5
		Ľubomír Hric	5
		Zoltán Lenčes	6
		Monika Micháľková	6
		Tomáš Plachký	5
		Jaroslav Sedláček	5
		Pavol Šajgalík	6
Rakúsko	MMQCh	Stanislav Komorovský	7
		Oľga Malkin	7
		Vladimír Malkin	7
		Michal Repiský	7
Rusko	CCMLM	Ľuboš Jankovič	6
		Peter Komadel	6
Srbsko	KŠF A.von H.	Miroslav Boča	5
	SM	Františka Frajkorová	5
		Linda Kipsová	5
Švajčiarsko	EuCheMS	Milan Drábik	2
Taliansko	ICC	Alexander Čeklovský	9
		Jana Hrachová	9
		Ľuboš Jankovič	9
		Peter Komadel	10
		Jana Madejová	9
		Helena Páľková	9
		Martin Pentrák	9
Thajsko	ACTSEA	Pavol Šajgalík	6
Turecko	ECM	Eva Scholtzová	7
		Ľubomír Smrčok	7
	EMKM	Monika Micháľková	4
		Tomáš Plachký	4
USA	CMS	Peter Komadel	7
	ICECC	Zoltán Lenčes	8
		Pavol Šajgalík	8
Veľká Británia	IUPAC	Milan Drábik	3
		Milan Drábik	4

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

Skratky použité v tabuľke C:

ACTSEA - International symposium on advanced ceramics and technology for sustainable energy applications

ANM - XIV. Odborný seminar pre doktorandov: "Anorganické nekovové materiály,,

BESSY - Stretnutie užívateľov synchrotrónového a neutrónového zdroja (BESSY a HMI)
CAC - XX. Conference on applied crystallography
CCGT - 8th Pacific Rim conference on ceramic and glass technology
CCMLM - "Clays, Clay minerals and layered materials 2009,,
CESTC - 6th Central European symposium on theoretical chemistry
CMS - 46th Annual meeting of the clay minerals society
CUDA-TESLA - CUDA-TESLA computing conference
EBMP - 13. medzinárodná konferencia: "Ecology and new building materials and products,,
ECERS - 11th International conference of the European ceramic society
ECM - ECM 25: 25th European crystallographic meeting
EFONGA - EFONGA Spring School
EMKM - Seminár o elektrónovej mikroskopii keramických materiálov
ENMR - 24th NMR: Central European NMR meeting
EuCheMS - Valné zhromaždenie Európskej asociácie chemických a molekulových vied
GFA - 2009 GFA annual meeting
ICC - 14. International clay conference
ICCMSE - International conference of computational methods in sciences and engineering 2009
ICECC - 33rd International conference and exposition on advanced ceramics and composites
ICMHN - First International conference on multifunctional, hybrid and nanomaterials
ICNRM - 6th International conference on nitrides and related materials
IUPAC - 42. kongres IUPAC
KŠF A.von H. - Konferencia štipendistov: Fondy Alexandra von Humboldta
Maltoviny - Konferencia MALTOVINY 2009
MBP - Seminár o metodách blízkeho pole
MMQCh - Workshop on modern methods in quantum chemistry
NAMMD - "Nanoskalige anorganische Materialien durch molekulares design: Werkstoffe für zukunftsweisende Technologien,,
NJM - Nanomateriály založené na jílových mineráloch
RK - "279 rozhovory o krystalografii,,
SM - 8th Students' meeting „Processing and application of Ceramics”
StNM - 9th St. Nicolaus meeting
TVMM - "Trendy ve vývoji moderních materiálů,,
XFEL - „International workshop on the science and instrumentation at the European XFEL: Femtosecond X-Ray experiments”