

Ústav anorganickej chémie SAV



Správa o činnosti organizácie SAV za rok 2012

Bratislava
január 2013

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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: doc. Ing. Miroslav Boča, PhD.
Vedecký tajomník: RNDr. Jana Madejová, DrSc.
Predseda vedeckej rady: RNDr. Peter Komadel, DrSc.
Člen snemu SAV: prof. RNDr. Pavol Šajgalík, DrSc.
Adresa: Dúbravská cesta 9, 845 36 Bratislava 45

<http://www.uach.sav.sk/>

Tel.: 02/59410401

Fax: 02/59410444

E-mail: uachzde@savba.sk, uachsekr@savba.sk

Názvy a adresy detašovaných pracovísk:

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

Vedúci detašovaných pracovísk:

- **Vitrum Laugaricio - Centrum kompetencie skla, spoločné pracovisko ÚACH SAV, TnU AD, RONA, a.s. a FCHPT STU**
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		K do 35 rokov		F	P	T
		M	Ž	M	Ž			
Celkový počet zamestnancov	89	43	46	11	18	79	67,59	52,72
Vedeckí pracovníci	53	36	17	9	6	45	39,03	39,03
Odborní pracovníci VŠ	21	5	16	2	12	20	16,78	10,36
Odborní pracovníci ÚS	13	2	11	0	0	12	9,78	3,33
Ostatní pracovníci	2	0	2	0	0	2	2	0

K – kmeňový stav zamestnancov v pracovnom pomere k 31.12.2012 (uvádzať zamestnancov v pracovnom pomere, vrátane riadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí, v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zborech)

F – fyzický stav zamestnancov k 31.12.2012 (bez riadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zborech)

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 31.12.2012)

Rodová skladba	Pracovníci s hodnosťou				Vedeckí pracovníci v stupňoch		
	DrSc.	CSc./PhD.	prof.	doc.	I.	IIa.	IIb.
Muži	6	30	3	9	6	14	16
Ženy	2	16	0	0	2	3	12

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

Veková štruktúra (roky)	< 31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	> 65
Muži	1	6	8	2	2	1	12	2	0
Ženy	7	5	4	4	1	1	3	3	0

Tabuľka 1d Priemerný vek zamestnancov organizácie k 31.12.2012

	Kmeňoví zamestnanci	Vedeckí pracovníci	Riešitelia projektov
Muži	45,7	44,5	46,6
Ženy	40,8	38,7	41,1
Spolu	43,2	42,7	44,1

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

Ústav bol aj v roku 2012 riešiteľom projektov financovaných z prostriedkov ŠF EÚ v objeme takmer 2,3 mil. € - sú to prostriedky dedikované ústavu. Celkový objem prostriedkov administrovaných v projektoch ŠF EÚ bol v roku 2012 cca 3,4 mil. €, čo predstavuje približne trojnásobok bežného ročného rozpočtu ústavu a je reálny predpoklad, že sa v nasledujúcich rokoch ešte zvýši. V roku 2012 sa ústav zúčastnil na výzve OP VaV OPVaV-2011/4.2/01-PN 4.2 *Prenos poznatkov a technológií získaných výskumom a vývojom do praxe v Bratislavskom kraji* v rámci projektu Centrum aplikovaného výskumu nových materiálov a transferu technológií, ktorý podala SAV začiatkom roku 2012. Z toho vyplynula aj naliehavá potreba rozšírenia administratívy ústavu. Zvýšený počet pracovníkov ústavu v posledných rokoch je spojený s nárastom počtu administratívnych pracovníkov manažujúcich projekty ŠF. Prepočítaný počet pracovníkov vzrástol z 59,6 FTE v roku 2008 na 67,59 FTE v roku 2012. Tento nárast počtu pracovníkov ústavu je hradený z prostriedkov projektov ŠF, avšak pri problematickom prísune prostriedkov z Agentúry Ministerstva školstva, vedy, výskumu a športu SR pre ŠF EÚ (ASFEU) častokrát vznikajú veľmi napäté situácie v mzdovom fonde ústavu.

Priemerný vek zamestnancov ÚACH SAV sa dlhodobo nemení a je pod hranicou 45 rokov. V roku 2012 je **priemerný vek všetkých pracovníkov ústavu 43,2 roku a priemerný vek vedeckých pracovníkov je 42,7**. Oproti roku 2011 ústav zaznamenal mierny nárast priemerného veku v oboch kategóriách pracovníkov. Dôvodom je, že žiadny z doktorandov v roku 2012 neukončil doktorandúru obhajobou vzhľadom na predĺženie doktorandského štúdia na 4 roky. Napriek tomu je zamestnávanie mladých schopných postdocov na ústave jednou z hlavných priorít. Takáto filozofia kladie nároky na personálnu a predovšetkým mzdovú politiku vedenia ústavu.

Motivácia mladých pracovníkov pre zotrvanie na ústave sa realizuje predovšetkým prostredníctvom poskytnutia možnosti zvyšovania ich kvalifikácie (stupeň IIb, IIa, 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. Tento fakt by mohlo pri tvorbe rozpočtu, hlavne mzdových fondov ústavov, zohľadniť aj vedenie SAV pri presadzovaní vlastnej mzdovej politiky v rámci SAV, čo sa na II. oddelení vied SAV už aj v obmedzenej forme realizuje.**

2. Vedecká činnosť

2.1. Domáce projekty

Tabuľka 2a Zoznam domácich projektov riešených v roku 2012

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2012 (v €)		
	A	B	A		B
			spolu	pre organizáciu	
1. Vedecké projekty, ktoré boli r. 2012 financované VEGA	12	1	107886	107886	-
2. Projekty, ktoré boli r. 2012 financované APVV	13	3	447868	345744	32243
3. Projekty OP ŠF	2	6	3085364	1934893	682118
4. Projekty centier excelentnosti SAV	0	1	-	-	4100
5. Iné projekty (FM EHP, ŠPVV, Vedecko-technické projekty, ESF, na objednávku rezortov a pod.)	0	0	-	-	-

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

Tabuľka 2b Zoznam domácich projektov podaných v roku 2012

Štruktúra projektov	Miesto podania	Organizácia je nositeľom projektu	Organizácia sa zmluvne podieľa na riešení projektu
1. Účasť na nových výzvach APVV r. 2012	-	2	
2. Projekty výziev OP ŠF podané r. 2012	Bratislava		
	Regióny		
3. Projekty výziev FM EHP podané r. 2012	-		

Názov projektu: Fyzikálno-chemická analýza fluoridových taveninových systémov pre elektrolytické vylučovanie kremíka pre fotovoltické aplikácie

Kód projektu: APVV-SK-CN-0029-12

Podávateľ projektu: Ing. Michal Korenko, PhD.

Zahraničný partner: Northeastern University, Shenyang, Čína (prof. Zhaowen Wang)

Stav: podaný

Názov projektu: Modelové a experimentálne štúdium organoílov s veľkými kationmi

Kód projektu: APVV-SK-AT-0015-12

Podávateľ projektu: Ing. Eva Scholtzová, CSc.,

Zahraničný partner: Institute for Theoretical Chemistry and Structural Biology, University of Vienna, Rakúsko (doc. Ing. Daniel Tunega, CSc.)

Stav: podaný

2.2. Medzinárodné projekty

2.2.1. Medzinárodné projekty riešené v roku 2012

Tabuľka 2c Zoznam medzinárodných projektov riešených v roku 2012

ŠTRUKTÚRA PROJEKTOV	Počet projektov		Čerpané financie za rok 2012 (v €)		
	A	B	A		B
			spolu	pre organizáciu	
1. Projekty 6. a 7. rámcového programu EÚ	0	1	-	-	73207
2. Multilaterálne projekty v rámci vedeckých programov COST, ERANET, INTAS, EUREKA, PHARE, NATO, UNESCO, CERN, IAEA, ESF (European Science Foundation), ERDF, ESA a iné	0	0	-	-	-
3. Projekty v rámci medzivládnych dohôd o vedecko-technickej spolupráci	2	0	-	-	-
4. Bilaterálne projekty	7	1	8886	8886	-
5. Podpora medzinárodnej spolupráce z národných zdrojov (MVTs, APVV,...)	4	0	45703	45703	-
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 2012

Tabuľka 2d Podané projekty 7. RP EÚ v roku 2012

Počet podaných projektov v 7. RP EÚ	A	B
		2

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

Názov projektu: Pushing the envelope of NMR spectroscopy for paramagnetic systems. A combined experimental and theoretical approach.

Kód projektu, číslo alebo akronym: FP7-PEOPLE-2-12-ITN, Grant Agreement Number 317127 (PITN-GA-2012-317127)

Podávateľ projektu: CNRS, France, Bertrand MINAULT

Koordinátor ÚACH: Vladimír Malkin, DrSc.

Partneri: TU Berlin (Germany), OULUN YLIOPISTO (Finland), University of Cambridge (United Kingdom), Consorzio Interuniversitario Risonanze Magnetiche di Metallo Proteine (Italy), Stockholms Universitet (Sweden), Universiteit Leiden (Netherlands), Bruker Biospin GMBH (Germany), Giotto Biotech (Italy), Astrazeneca AB (Sweden), ETH Zurich (Switzerland)

Stav: podporený (úspešný)

Názov projektu: Ultra lightweight structural components produced using hybrid composites based on reinforced aluminium foam

Kód projektu: M-ERA.NET 2012

Podávateľ projektu: Dr. Ing. Jaroslav Jerz, Ústav materiálov a mechaniky strojov SAV

Partneri projektu: Taiwan (National Chung Cheng University), Turecko (Teknoser Teknik Seramik ve Kompozitleri Sanayi ve Ticaret, Istanbul)

Koordinátor ÚACH: Ing. Jaroslav Sedláček, PhD.

Stav: podaný

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

2.2.3. Zámery na čerpanie štrukturálnych fondov EÚ v ďalších výzvach

Vybudovanie univerzitných vedeckých parkov a výskumných centier

kód výzvy: OPVaV-2012/4.2/08-RO

Univerzitný vedecký park STU Bratislava

Predkladateľ STU

Vybudovanie univerzitných vedeckých parkov/výskumných centier

kód výzvy: OPVAV-2011/4.2/01-PN

Centrum aplikovaného výskumu nových materiálov a transferu technológií

Predkladateľ Úrad SAV

2.3. Najvýznamnejšie výsledky vedeckej práce

2.3.1. Základný výskum

Názov: Aplikácia moderných spektrálnych a difrakčných metód na fluoridové anorganické systémy

Riešiteľský kolektív: M. Boča, F. Šimko, P. Barborík

Anorganické zlúčeniny, v ktorých sú atómy fluóru koordinované na centrálny atóm niektorého kovového prvku, sa bežne vyskytujú ako súčasť fluoridových taveninových systémov rôznorodých priemyselných aplikácií. Vzorky komplexných fluoridov pripravených metódou roztavených solí sa analyzovali najmodernejšími spektrálnymi metódami. Na základe údajov z práškových neutrónových difrakčných záznamov v kombinácii s MAS NMR spektroskopiou sa v systéme $\text{Na}_3\text{AlF}_6\text{-FeF}_3$ potvrdila prítomnosť $\text{Na}_3(\text{Al}_x\text{Fe}_y)\text{F}_6$ a $\text{Na}_5(\text{Al}_x\text{Fe}_y)_3\text{F}_{14}$ ($x + y = 1$) tuhých roztokov. To znamená, že výmena centrálnych atómov hliníka za atómy železa prebieha len čiastočne a aj to v závislosti na koncentrácii FeF_3 , čo vylúčilo doteraz uvažovaný predpoklad úplnej výmeny. Na základe výsledkov získaných pomocou röntgenovej fotoelektrónovej spektroskopie (XPS) na sérii látok NaF , K_2TaF_7 , K_3TaF_8 , K_2ZrF_6 , $\text{Na}_7\text{Zr}_6\text{F}_{31}$ a K_3ZrF_7 sa navrhla metóda, pomocou ktorej je možné na základe údajov väzbových energií elektrónov na 1s orbitáloch identifikovať a rozlíšiť rôzne väzbové vlastnosti koordinovaného atómu fluóru, a to jeho prítomnosť vo forme iónovej (s najnižšou väzbovou energiou), terminálnej alebo mostíkovo koordinovanej (s najvyššou väzbovou energiou).

Publikácie:

ŠIMKO, F. - PRITULA, O. - RAKHMATULLIN, A. - BESSADA, C. The study of the system $\text{Na}_3\text{AlF}_6\text{-FeF}_3$. In Journal of Fluorine Chemistry, 2012, vol. 144, p. 137-142. (2.033 - IF2011)

BOČA, M. - BARBORÍK, P. - MIČUŠÍK, M. - OMASTOVÁ, M. X-ray photoelectron spectroscopy as detection tool for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF , K_2TaF_7 , K_3TaF_8 , K_2ZrF_6 , $\text{Na}_7\text{Zr}_6\text{F}_{31}$ and K_3ZrF_7 . In Solid State Sciences, 2012, vol. 14, p. 828 - 832. (1.856 - IF2011).

Projekty:

VEGA 2/0179/10, APVV-0460-10, LPP-0344-09, Machina 1

2.3.2. Aplikčný typ

Názov: Príprava a charakterizácia žiaruvzdorných materiálov na báze MgO alebo Al_2O_3 obsahujúcich nitridové fázy

Riešiteľský kolektív: ÚACH: Z. Lenčes, P. Šajgalík

Montanuniversität Leoben, Austria: S. Pichlbauer-Gschiel, H. Harmuth

V rámci projektu „Synthesis and characterisation of oxinitrides in ordinary ceramic refractories“ boli vyvinuté nové typy žiaruvzdorných materiálov na báze MgO alebo Al_2O_3 obsahujúce nitridové fázy. Navrhli sa nové zloženia týchto žiaruvzdorných materiálov s keramickou väzbou pozostávajúcou z MgSiAlON , respektíve s väzbou obsahujúcou polytypy AlN, alebo AlONu. Takéto žiaruvzdorné materiály majú pri aplikáciách predĺženú životnosť vzhľadom na silnejšie kovalentné väzby v nitridových fázach. Tento projekt je riešený v spolupráci s Montanuniversität Leoben, Rakúsko a spoločnosťou RHI AG, Technology Center, Leoben, Rakúsko, ktorá celý projekt financuje.

Patent:

European patents:

Application No.: **12 192 453.4**

Application date: 13.11.2012

Inventors: H. Harmuth, S. Gschiel, Z. Lenčes, P. Šajgalík

Invention Disclosure F08/11:

“Basische Feuerfestprodukte mit einer keramischen Bindung bestehend aus einem AlN Polytypen, MgO und MA-Spinell”

Invention Disclosure F09/11:

“Basische Feuerfestprodukte mit einer keramischen Bindung bestehend aus einem MgSiAlON , MgO und MA-Spinell“.

Publikácie:

PICHLBAUER S. - HARMUTH H. - LENČEŠ Z. - ŠAJGALÍK P. Preliminary investigations of the production of MgAlON bonded refractories. In Journal of the European Ceramic Society, 2012, vol. 32, p. 2013-2018. (2.353 - IF2011).

GSCHIEL S. - HARMUTH H. - LENČEŠ Z. - ŠAJGALÍK P. Production of MgAlON bonded alumina refractories. In Interceram, Refractories, 2012, no. 1, p. 48-51.

GSCHIEL S. - HARMUTH H. - LENČEŠ Z. - ŠAJGALÍK P. - YE G. Investigation of MgAlON formation under different conditions and refractory application. In The 6th International Symposium on Refractories, 18.-21.10.2012, Proceedings, Zhengzhou University Press, China, 2012, p. 489-492.

2.3.3. Medzinárodné vedecké projekty

Názov: Svetlo emitujúce luminofóry na báze ternárnych nitridov

Riešiteľský kolektív: Z. Lenčes, M. Hrabalová, I. Ibrahim, P. Šajgalík

V rámci medzinárodného projektu *Functional nitrides for energy applications* a v spolupráci s National Institute of Advanced Industrial Science and Technology, Nagoya, Japonsko boli vyvinuté luminofóry na báze ternárnych nitridov kremíka. Ternárne nitridy MgSiN_2 a LaSi_3N_5 sa pripravili nitridáciou zmesí $\text{Mg}_2\text{Si/Si/Si}_3\text{N}_4$ a $\text{LaSi/Si/Si}_3\text{N}_4$. Východiskové zmesi sa dopovali oxidmi Eu_2O_3 alebo CeO_2 . Luminofór $\text{MgSiN}_2\text{:Eu}$ emitoval červené svetlo a luminofóry $\text{LaSi}_3\text{N}_5\text{:Eu}$ a $\text{MgSiN}_2\text{:Ce}$ emitovali žiarenie v oblasti viditeľného zeleného svetla. Maximálna intenzita fotoluminescenčného žiarenia sa dosiahla u luminofórov dopovaných 4 mol% európie. Tieto luminofóry možno použiť na výrobu diód emitujúcich biele svetlo (LED).

Program: 7. RP Európskej únie, Marie Curie Initial Training Networks

Názov projektu: Nitridové materiály s funkčnými vlastnosťami pre aplikácie v energetike (*Functional nitrides for energy applications*)

Evidenčné číslo projektu: 264873

Zodpovedný riešiteľ: P. Šajgalík

Trvanie projektu: 2011-2014

Publikácia:

LENČEŠ, Z. - HRABALOVÁ, M. - CZÍMEROVÁ, A. - ŠAJGALÍK, P. - ZHOU, Y. - HIRAO, K. Luminescent properties of europium-doped lanthanum silicon nitride phosphor. In Journal of the Korean Ceramic Society, 2012, vol. 49, no. 4, p. 325-327.

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

PUBLIKAČNÁ A EDIČNÁ ČINNOSŤ	A Počet v r. 2012/ doplnky z r. 2011	B Počet v r. 2012/ doplnky z r. 2011	C Počet v r. 2012/ doplnky z r. 2011
1. Vedecké monografie vydané v domácich vydavateľstvách (AAB, ABB, CAB)	0 / 0	0 / 0	0 / 0
2. Vedecké monografie vydané v zahr. vydavateľstvách (AAA, ABA, CAA)	1 / 0	0 / 0	0 / 0
3. Odborné monografie, vysokoškolské učebnice a učebné texty vydané v domácich vydavateľstvách (BAB, ACB)	0 / 0	0 / 0	0 / 0
4. Odborné monografie a vysokoškolské učebnice a učebné texty vydané v zahr. vydavateľstvách (BAA, ACA)	0 / 0	0 / 0	0 / 0
5. Kapitoly vo vedeckých monografiách vydaných v domácich vydavateľstvách (ABD, ACD)	0 / 0	0 / 0	0 / 0
6. Kapitoly vo vedeckých monografiách vydaných v zahraničných vydavateľstvách (ABC, ACC)	0 / 0	0 / 0	0 / 0
7. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v domácich vydavateľstvách (BBB, ACD)	0 / 0	0 / 0	0 / 0
8. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v zahraničných vydavateľstvách (BBA, ACC)	0 / 0	0 / 0	0 / 0
9. Vedecké a odborné práce v časopisoch evidovaných v Current Contents (ADC, ADCA, ADCB, ADD, ADDA, ADDB, CDC, CDCA, CDCB, CDD, CDDA, Cddb, BDC, BDCA, BDCB, BDD, BDDA, Bddb)	54 / 2	0 / 0	0 / 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)	6 / 0	0 / 0	0 / 0
11. Vedecké a odborné práce v zborníkoch (konferenčných aj nekonferenčných, vydaných tlačou alebo na CD)			
a/ recenzovaných, editované (AEC, AED, AFA, AFB, AFBA, AFBB, BEC, BED, CEC, CED)	5 / 0	0 / 0	0 / 0
b/ nerecenzovaných (AEE, AEF, AFC, AFD, AFDA, AFDB, BEE, BEF)	17 / 0	0 / 0	0 / 0

12. Vydané periodiká evidované v Current Contents	0	0	0
13. Ostatné vydané periodiká	0	0	0
14. Vydané alebo editované zborníky z vedeckých podujatí (FAI)	0/0	0/0	0/0
15. Vedecké práce uverejnené na internete (GHG)	0 / 0	0 / 0	0 / 0
16. Preklady vedeckých a odborných textov (EAJ)	0 / 0	0 / 0	0 / 0

A - pracovisko SAV je uvedené ako pracovisko (adresa) autora, alebo je súčasťou kolaborácie alebo iného združenia, ktoré je uvedené ako pracovisko (adresa) autora

B - pracovisko SAV nie je na publikácii uvedené, pretože prameň údaj o pracovisku autora neobsahuje, práca ale vznikla na pracovisku SAV

C - pracovisko SAV je uvedené ako materské pracovisko autora odlišné od pracoviska, na ktorom práca vznikla (napr. „on leave...“, „permanent address...“, „present address...“)

Tabuľka 2f Ohlasy

OHLASY	A Počet v r. 2011/ doplňky z r. 2010	B Počet v r. 2011/ doplňky z r. 2010
Citácie vo WOS (1.1, 2.1)	1140 / 44	0 / 0
Citácie v SCOPUS (1.2, 2.2)	96 / 3	0 / 0
Citácie v iných citačných indexoch a databázach (9, 10)	0 / 0	0 / 0
Citácie v publikáciách neregistrovaných v citačných indexoch (3, 4)	1 / 0	0 / 0
Recenzie na práce autorov z organizácie (5, 6, 7, 8)	0 / 0	0 / 0

A - pracovisko SAV je uvedené ako pracovisko (adresa) autora, alebo je súčasťou kolaborácie alebo iného združenia, ktoré je uvedené ako pracovisko (adresa) autora, alebo pracovisko SAV nie je na publikácii uvedené, pretože prameň údaj o pracovisku autora neobsahuje, práca ale vznikla na pracovisku SAV

B - pracovisko SAV je uvedené ako materské pracovisko autora odlišné od pracoviska, na ktorom práca vznikla (napr. „on leave...“, „permanent address...“, „present address...“)

2.5. Aktívna účasť na vedeckých podujatiach

Tabuľka 2g Vedecké podujatia

Prednášky a vývesky na medzinárodných vedeckých podujatiach	53
Prednášky a vývesky na domácich vedeckých podujatiach	31

2.6. Vyžiadané prednášky

2.6.1. Vyžiadané prednášky na medzinárodných vedeckých podujatiach

M. Boča, P. Barborík, M. Micušík, M. Omastová: X-ray photoelectron spectroscopy as a tool for identification of fluorine atoms with different bonding properties, ESAS 2012 - XXth SCSC. European symposium on atomic spectrometry 2012 and XXth Slovak-Czech spectroscopic conference, 7. – 12. 10. 2012

D. Galusek, R. Klement, A. Prnová: Aluminate Glass and Glass Ceramic Phosphors, 10th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications, Dresden, Germany, 20. – 23. 5. 2012

D. Galusková, D. Galusek: Výskum a projektové aktivity Centra kompetencie skla, Příklady dobré praxe při vytváření partnerských sítí mezi VaV institucemi a aplikační sférou, Brno, ČR, 18. – 19. 9. 2012

D. Galusková, M. Kašiarová, M. Hnatko, D. Galusek, P. Šajgalík, J. Dusza: Influence of corrosion on the surface characteristics and mechanical properties of structural ceramics, Potential and Applications of Surface Nanotreatment of Polymers and Glass, Brno, ČR, 15. – 17. 10. 2012

M. Liška, M. Chromčíková, J. Holubová, K. Faturíková: Glass structure study by Raman spectroscopy combined with thermodynamic modeling, European symposium on atomic spectrometry 2012 and XXth Slovak-Czech spectroscopic conference, Tatranská Lomnica, 7. – 12. 10. 2012

O. Malkin: NMR spin-spin couplings through a hydrogen bond and overlap of densities of localized molecular orbitals, 2nd YIM EAST-NMR-2012 conference, Bratislava, 16. – 18. 5. 2012

V. Malkin: Second-order spin-orbit contributions to EPR parameters: obstacles for theoretical methods and experimental studies, 10th International Conference on Relativistic Effects in Heavy-Element Chemistry and Physics (REHE-2012) Corrientes, Argentina, 11. – 17. 9. 2012

P. Šajgalík, M. Hnatko, Z. Lenčėš, F. Frajkorová, E. A. Bolaños: Electrically Conductive SiC Ceramics, ISASC 2012 - International Symposium on New Frontier of Advanced Si-Based Ceramics and Composites, Seoul, KOREA, 25. – 28. 5. 2012

P. Šajgalík, Š. Lojanová, M. Hnatko, Z. Lenčėš, M. Gall, Z. Chlup: GB chemistry of SiC/Si₃N₄ nano/micro-composites – implications to fracture behavior - experimental and theoretical study, CMCEE, Dresden, Německo, 21. 5. 2012

P. Šajgalík, Z. Lenčėš, T. Plachký, R. Riedel, H.J. Kleebe: Functionalization of nitride engineering ceramics by polymer derived sintering aids, 7th International Symposium on Nitrides, Saint Malo, Francúzsko, 3. – 6. 6. 2012

P. Šajgalík, Z. Lenčėš, L. Benco, D. Velič, Y. Zhou, K. Hirao: Ternary Silicon Nitrides – from Engineering to Phosphors, Bi-Annual meeting of the World Academy of Ceramics, WAC, Perugia, Taliansko, 29. 6. – 3. 7. 2012

P. Šajgalík: Si₃N₄ + SiC nanoceramics with excellent room and high temperature properties, MRS 2012, Warsaw, Poland, 17. 9. 2012

P. Šimurka, R. Klement, J. Sedláček, J. Kraxner: Corrosion of refractories used in a melting of industrially produced tableware glass, 11th European Society on Glass Conference, Maastricht, Holandsko, 3. – 6. 6. 2012

2.6.2. Vyžiadané prednášky na domácich vedeckých podujatiach

M. Pentrák, J. Madejová, V. Hronský, P. Uhlík, **P. Komadel**: Characterization and acid dissolution of a fine fraction of a bentonite, Physics of Materials 2012, Technická univerzita, Košice, 17 – 19. 10. 2012

J. Madejová, V. Hronský, H. Pálková, Ľ. Jankovič: IR and NMR study of acid-treated organo-montmorillonites, Physics of Materials 2012, Technická univerzita, Košice, 17 – 19. 10. 2012

2.6.3. *Vyžiadané prednášky na významných vedeckých inštitúciách*

J. Bujdák: Interaction between organic dyes and layered silicates and its relevance for potential applications, Department of Material Science, Interdisciplinary Faculty of Science and Engineering, Shimane University, Matsue, Japonsko, 21. 1. 2012

D. Galusek: Alumina-based materials: New prospects and applications, Institute of Electronic Materials Technology, Warszawa, Poľsko, 18. 9. 2012

D. Galusek: Aluminate Glasses: Preparation and Properties, GLACERCO Seminar, University of Torino, Taliansko, 21. 11. 2012

D. Galusek: New trends and developments in alumina-based materials, Darmstadt University of Technology, Darmstadt, Nemecko, 7. 12. 2012

D. Galusek: Alumina-based materials: new trends and applications, Seminar of CEITEC RG 2-1, Central European Institute of Technology, Brno, ČR, 11. 12. 2012

D. Galusková: Chemical durability of structural ceramics in aqueous solution under hydrothermal conditions, Technische Universität Darmstadt Institut für Materialwissenschaft Fachgebiet Disperse Feststoffe, Darmstadt, Nemecko, 7. 12. 2012

O. Malkin: Our recent progress in NMR calculations: new methods for number crunching, analysis, and insight, Institut für Organische Chemie, Universität Regensburg, Nemecko, 10. 07. 2012

O. Malkin: Visualization and analysis of NMR spin-spin coupling pathways, Clemens-Schoepf Institute, TU Darmstadt, Nemecko, 16. 10. 2012

O. Malkin: Visualization and analysis of NMR spin-spin coupling pathways, Physics Department, University of Buenos Aires, Argentina, 19. 9. 2012

V. Malkin: Fully relativistic calculations of NMR and EPR parameters,

- Ecole polytechnique fédérale de Lausanne, Institute of Theoretical Physics, Švajčiarsko, 12. 4. 2012
- Laboratoire de Chimie Théorique, Institut de Chimie Moléculaire de Grenoble, Université Joseph Fourier, Francúzsko, 17. 4. 2012

V. Malkin: Our recent progress in NMR calculations: new methods for number crunching, analysis and insight, Faculty of Chemistry, University of Warsaw, Poľsko, 11. 6. 2012

V. Malkin: Relativistic calculations of NMR and EPR parameters,

- Institute of Physical and Theoretical Chemistry, Goethe University Frankfurt, Nemecko, 15. 10. 2012,
- Clemens-Schoepf Institute, TU Darmstadt, Nemecko, 16. 10. 2012,
- Institut für Physikalische Chemie, Universität Stuttgart, Nemecko, 18. 10. 2012

V. Malkin: Recent progress in fully relativistic calculations of NMR and EPR parameters,

- Physics Department, University of Buenos Aires, Argentina, 19. 9. 2012,
- Laboratoire de Chimie et de Physique Quantiques, CNRS/ Université Paul Sabatier, Toulouse, Francúzsko, 7. 12. 2012

J. Noga, J. Šimunek: Alternative exact and robust orbital optimization scheme in quantum chemistry suitable for linear scaling algorithms, Institut Chemii, Uniwersytet Ślaski, Katowice, Poľsko, 7. 3. 2012

A. Prnová, A. Piatriková, A. Domanická, M. Migát, B. Hruška, K. Ghilányová, R. Klement, J. Kraxner, D. Galusek, P. Šajgalík: Preparation and characterization of glasses, ceramics and glassceramics materials in the system $\text{Al}_2\text{O}_3\text{-Re}_2\text{O}_3$, University of Gent, Department of Inorganic and Physical Chemistry, Gent, Belgicko, 15. 3. 2012

P. Šajgalík: Electrically Conductive SiC, EMPA, Dübendorf, Švajčiarsko, 10. 7. 2012

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

2.7. Patentová a licenčná činnosť na Slovensku a v zahraničí v roku 2012

2.7.1. Vynálezy, na ktoré bol udelený patent

V zahraničí - počet patentov: 1

Číslo PV: 5046221

Mená autorov: Lenčéš Zoltán, Kiyoshi Hirao, You Zhou, Xinwen Zhu

Názov vynálezu: Fabrication method of high thermal conductivity silicon nitride ceramics with high mechanical reliability

Majiteľ/spolumajiteľ: National Institute of Advanced Industrial Science and Technology, Nagoya

Krajina: Japonsko

2.7.2. Prihlásené vynálezy

V zahraničí - počet patentov: 1

Číslo PV: 12 192 453.4

Mená autorov: Lenčéš Zoltán, Šajgalík Pavol, Harald Harmuth, Sabine Gschiel

Názov vynálezu: Basische Feuerfestprodukte mit einer keramischen Bindung bestehend aus einem AlN Polytypen, MgO und MA-Spinell" "Basische Feuerfestprodukte mit einer keramischen Bindung bestehend aus einem MgSiAlON, MgO und MA-Spinell"

Majiteľ/spolumajiteľ: RHI AG

Krajina: Rakúsko

2.7.3. Predané licencie

2.7.4. Realizované patenty

Finančný prínos pre organizáciu SAV v roku 2012 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.

Počet karentovaných publikácií a kapitol v monografiách v tomto roku dosiahol číslo 57, čo pri počte 39,03 vedeckých pracovníkov (prepočítaný stav, podľa Tabuľky 1a) znamená 1,46 karentovanej publikácie na vedeckého pracovníka. Aj keď tento parameter oproti vlaňajšku mierne stúpol (vlani 1,4), stav nepovažujeme za uspokojivý. Cieľom naďalej ostáva dosiahnuť dve

publikácie na vedeckého pracovníka ročne, ktorý zodpovedá štandardu vyspelých vedeckých pracovísk s podobným zameraním. Priemerný impakt faktor časopisov, v ktorých boli práce uverejnené, bol 2,25, kým vlani bol 2,14. *Citovanosť (vo všetkých dostupných databázach WOK – 1184, SCOPUS – 99) na vedeckého pracovníka (prepočítaný stav) je 32,9 citácie. Potešiteľný je trvalý trend rastu počtu citácií a ich prepočtu na vedeckého pracovníka 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 13, viaceré z nich odznali na veľmi významných svetových konferenciách. Pracovníci ústavu predniesli 20 prednášok na zahraničných pracoviskách.

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 2012

Forma	Počet k 31.12.2012				Počet ukončených doktorantúr v r. 2012					
	Doktorandi				Ukončenie z dôvodov					
	celkový počet		z toho novoprijatí		ukončenie úspešnou obhajobou		predčasné ukončenie		neúspešné ukončenie	
	M	Ž	M	Ž	M	Ž	M	Ž	M	Ž
Interná zo zdrojov SAV	8	5	3	2	0	0	0	0	0	0
Interná z iných zdrojov	1	5	0	1	0	0	0	0	0	0
Externá	0	0	0	0	0	0	0	1	0	0
Spolu	9	10	3	3	0	0	0	1	0	0

3.2. Zmena formy doktorandského štúdia

Tabuľka 3b Počty preradení

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

3.3. Zoznam doktorandov, ktorí ukončili doktorandské štúdium úspešnou obhajobou

Tabuľka 3c Menný zoznam ukončených doktorandov v roku 2012 úspešnou obhajobou

Meno doktoranda	Forma DŠ	Mesiac, rok nástupu na DŠ	Mesiac, rok obhajoby	Číslo a názov študijného odboru	Meno a organizácia školiteľa	Fakulta udeľujúca vedeckú hodnosť
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Zoznam interných a externých doktorandov je uvedený v Prílohe A.

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	Doktorandské štúdium uskutočňované na: (univerzita/vysoká škola a fakulta)
chemická fyzika	4.1.11	Prírodovedecká fakulta UK
anorganická chémia	4.1.15	Prírodovedecká fakulta UK
anorganická technológia a materiály	5.2.19	Fakulta chemickej a potravinárskej technológie STU

Tabuľka 3e Účasť na pedagogickom procese

Menný prehľad pracovníkov, ktorí boli menovaní do odborových komisií študijných programov doktorandského štúdia	Menný prehľad pracovníkov, ktorí pôsobili ako členovia vedeckých rád univerzít, správnych rád univerzít a fakúlt	Menný prehľad pracovníkov, ktorí získali vyššiu vedeckú, pedagogickú hodnotu alebo vyšší kvalifikačný stupeň
doc. Ing. Miroslav Boča, PhD. (anorganická technológia a materiály)	prof. Ing. Marek Liška, DrSc. (Fakulta priemyselných technológií TnUAD v Púchove)	Mgr. Ľuboš Jankovič, PhD. (IIa)
doc. Ing. Miroslav Boča, PhD. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Fakulta chemické technológie VŠCHT, Praha, ČR)	Mgr. Stanislav Kedžuch, PhD. (IIa)
RNDr. Juraj Bujdák, DrSc. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	Ing. Róbert Klement, PhD. (IIa)
doc. RNDr. Milan Drábik, CSc. (anorganická chémia)	prof. Ing. Marek Liška, DrSc. (Fakulta chemická, Vysoké učení technické v Brně, VUT Brno, Česko)	Ing. Helena Pálková, PhD. (IIa)
doc. Ing. Dušan Galusek, PhD. (anorganická technológia a materiály)	prof. RNDr. Jozef Noga, DrSc. (Prírodovedecká fakulta UK)	Ing. Jaroslav Sedláček, PhD. (IIa)
doc. Ing. Miroslav Hnatko, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Hutnícka fakulta TUKE)	Mgr. Peter Švančárek, PhD. (IIa)
RNDr. Peter Komadel, DrSc. (anorganická chémia)	prof. RNDr. Pavol Šajgalík, DrSc. (Trenčianska univerzita Alexandra Dubčeka v Trenčíne)	
doc. Ing. Zoltán Lenčes, PhD. (odbor v zahraničí)	prof. RNDr. Pavol Šajgalík, DrSc. (Vysoké učení technické, Brno)	
doc. Ing. Zoltán Lenčes, PhD. (anorganická chémia)	prof. RNDr. Pavol Šajgalík, DrSc. (Fakulta metalurgie a materiálového inžinierství, Vysoká škola báňská TU)	
doc. Ing. Zoltán Lenčes, PhD. (anorganická technológia a materiály)	prof. RNDr. Pavol Šajgalík, DrSc. (Slovenská technická univerzita v Bratislave)	
prof. Ing. Marek Liška, DrSc. (anorganická technológia a materiály)		

prof. Ing. Marek Liška, DrSc. (fyzika kondenzovaných látok a akustika)		
prof. Ing. Marek Liška, DrSc. (odbor v zahraničí)		
RNDr. Jana Madejová, DrSc. (anorganická technológia a materiály)		
prof. RNDr. Jozef Noga, DrSc. (anorganická chémia)		
prof. RNDr. Jozef Noga, DrSc. (chemická fyzika)		
prof. RNDr. Jozef Noga, DrSc. (fyzika plazmy)		
prof. RNDr. Pavol Šajgalík, DrSc. (anorganická technológia a materiály)		

3.5. Údaje o pedagogickej činnosti

Tabuľka 3f Prednášky a cvičenia vedené v roku 2012

PEDAGOGICKÁ ČINNOSŤ	Prednášky		Cvičenia a semináre	
	doma	v zahraničí	doma	v zahraničí
Počet prednášateľov alebo vedúcich cvičení	1	2	9	3
Celkový počet hodín v r. 2012	4	12	496	42

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	6
2.	Počet vedených alebo konzultovaných diplomových a bakalárskych prác	10
3.	Počet pracovníkov, ktorí pôsobili ako školitelia doktorandov (PhD.)	11
4.	Počet školených doktorandov (aj pre iné inštitúcie)	23
5.	Počet oponovaných dizertačných a habilitačných prác	6
6.	Počet pracovníkov, ktorí oponovali dizertačné a habilitačné práce	4
7.	Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby DrSc. prác	1
8.	Počet pracovníkov, ktorí pôsobili ako členovia komisií pre obhajoby PhD. prác	7
9.	Počet pracovníkov, ktorí pôsobili ako členovia komisií, resp. oponenti v inauguračnom alebo habilitačnom konaní na vysokých školách	1

3.6. Iné dôležité informácie k pedagogickej činnosti

ÚACH SAV vypísal pre akademický rok 2012/2013 celkovo 12 tém pre doktorandské štúdium v troch rôznych študijných odboroch: 4.1.15 Anorganická chémia, 5.2.19 Anorganické technológie a materiály a 4.1.11 Chemická fyzika. Na akademický rok 2012/2013 boli prijatí piati noví študenti (Mgr. Peter Boháč a Mgr. Martin Kontrík na študijný odbor 4.1.15, Mgr. Marcela Hrdá na študijný odbor 4.1.11, Ing. Ľudmila Sekeráková a Ing. Michal Šimurda na študijný odbor 5.2.19).

Nadálej prebieha spolupráca medzi ÚACH a Fakultou metalurgie a materiálového inžinýrství VŠB v Ostrave na základe zmluvy podpísanej medzi fakultou a ústavom o spolupráci v inžinierskom a doktorandskom štúdiu. V rámci tejto zmluvy sú na ústave školení doktorandi Ing. Evelyn Bolaños Castro, Ing. Monika Hrabalová a Ing. Vladana Šamajová (škooliteľmi za ÚACH sú doc. Zoltán Lenčéš, PhD. a doc. Miroslav Hnatko, PhD.). V tomto roku sme zaznamenali zo strany študentov VŠB TU Ostrava ďalší záujem o PhD štúdium na našom pracovisku, konkrétne v oblasti vývoja keramických materiálov pre bioaplikácie.

Od júna 2012 začal doktorandské štúdium doktorand z Egypta MSc. Ibrahim Ismail, ktorý bol prijatý na tému „Elektrónová štruktúra a fotoluminiscenčné vlastnosti luminofórov na báze LaSi_3N_5 “ v rámci projektu 7. RP EÚ FUNEA. Jeho školiteľom je doc. Ing. Zoltán Lenčéš, PhD. V rámci zmluvy podpísanej medzi ústavom, Montanuniversität Leoben a spoločnosťou RHI, GmbH je na ústave školená aj Ing. Christina Atzenhofer.

PhD študenti na ÚACH SAV sa pravidelne zúčastňujú na študentských vedeckých podujatiach a konferenciách, akými sú ŠVK 2012 Bratislava, IX. Seminár - Pokroky v anorganickej chémii 2012 v Modre, ktoré sú organizované Prírodovedeckou fakultou UK. Tria študenti sa zúčastnili medzinárodnej letnej školy organizovanej v Banskej Štiavnici v rámci programu Erasmus Intensive Programme in Advanced Environmental Geology 1.

Dôležitou súčasťou pedagogického procesu na ÚACH SAV je aj organizovanie praxe pre študentov 4. a 5. ročníka PríF UK v Bratislave (v spolupráci s prof. G. Pleschom). V roku 2012 sa praxe zúčastnili dvaja študenti 4. ročníka.

Dňa 26. septembra 2012 sa na ÚACH SAV konala SÚŤAŽ MLADÝCH VEDECKÝCH PRACOVNÍKOV. Súťaže sa zúčastnilo 14 mladých pracovníkov do 35 rokov z viacerých inštitúcií (ÚACH SAV, TnU AD Trenčín, FCHPT STU). Ich prezentácie posudzovala šesťčlenná komisia, ktorej predsedom bol RNDr. Peter Komadel, DrSc. Komisia vyjadrila spokojnosť s vedeckou aj formálnou kvalitou prezentácií. Výsledky súťaže:

1.miesto: Ing. Martin Michálek (ÚACH SAV)

2.miesto: Ing. Ondrej Hanzel (ÚACH SAV)

3.miesto: Mgr. Valéria Bizovská (ÚACH SAV)

Ing. Michálek spolu s Mgr. Bizovskou reprezentovali ústav na medzinárodnom kole tejto súťaže, tentokrát na Karlovej Univerzite v Prahe, na ktorom boli prítomní aj súťažiaci z ÚACH ČAV v Řeži u Prahy.

Na ÚACH aj naďalej pracuje Snem mladých vedeckých pracovníkov, ktorý bol kreovaný ako poradný orgán riaditeľa ústavu. Snem združuje doktorandov a pracovníkov s VŠ vzdelaním do 35 rokov. Ich zástupkyňa Ing. B. Kubíková, 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 s doktorandským štúdiom. Výbor snemu spolu so svojimi členmi úspešne zorganizoval dňa 08. 11. 2012 Deň otvorených dverí na ÚACH SAV, ktorý sa konal v rámci Týždňa vedy na Slovensku. Táto akcia mala mimoriadny ohlas a zúčastnilo sa jej okolo 180 študentov z bratislavských i mimobratislavských stredných i vysokých škôl.

4. Medzinárodná vedecká spolupráca

4.1. Medzinárodné vedecké podujatia

4.1.1. Medzinárodné vedecké podujatia, ktoré organizácia SAV organizovala v roku 2012 alebo sa na ich organizácii podieľala, s vyhodnotením vedeckého a spoločenského prínosu podujatia

Workshop on Modern Methods in Quantum Chemistry, Mariapfarr, Austria, 26.02.-02.03.2012
37 účastníkov zo 6 krajín. Prezentované práce: 18 prednášok, 15 vývesok.

4.1.2. Medzinárodné vedecké podujatia, ktoré usporiada organizácia SAV v roku 2013 (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	2	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

doc. RNDr. Milan Drábik, CSc.

European Association for Chemical and Molecular Sciences (EuCheMS) (funkcia: člen v divízii anorganická chémia)
Institute of Materials, Minerals and Mining, U.K. (funkcia: doživotný člen)
International Union of Pure and Applied Chemistry (IUPAC) (funkcia: titular member v divízii II anorganická chémia)
Slovenský národný komitét IUPAC (funkcia: predseda)

doc. Ing. Dušan Galusek, PhD.

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

RNDr. Peter Komadel, DrSc.

Clay Mineral Society (funkcia: predseda od 2012-2013)
European Clay Groups Association (funkcia: predseda 2011-2015)

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)

RNDr. Jana Madejová, DrSc.

Clay Mineral Society (funkcia: člen)

Dr. Vladimír Malkin, DrSc.

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

prof. RNDr. Jozef Noga, DrSc.

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 committee)

International Ceramic Federation (funkcia: člen predstavenstva)

Materials Research Society (funkcia: člen)

Permanent Executive Committee ECerS (funkcia: volený člen)

World Academy of Ceramics (funkcia: volený člen)

World Academy of Ceramics - Výberová komisia pre nových členov (funkcia: volený člen)

doc. Ing. Peter Šimurka, PhD.

European Society on Glass Science and Technology (funkcia: člen)

International Commission on Glass (funkcia: výkonný tajomník)

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

Tabuľka 4b Experti hodnotiaci medzinárodné projekty

Meno pracovníka	Typ programu/projektu/výzvy	Počet hodnotených projektov
Šajgalík Pavol	Člen hodnotiaceho panelu DFG pre program SPP 1568 „Design and Generic Principles of Self-Healing Materials, Jena, Nemecko	12

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

Bujdák Juraj

- National Institute for Materials Science, Tsukuba, Ibaraki, Japonsko, 10. - 27. 1. 2012, pobyt sa uskutočnil v rámci MAD, účasť na podujatí International Lectures on Layered Inorganic / Organic Hybrid Materials dňa 20. 1. 2012 s pozvanou prednáškou s názvom Interaction between organic dyes and layered silicates and its relevance for potential applications. Počas pobytu prebiehal experimentálny výskum a podarilo sa vyvinúť metodický postup prípravy hybridných materiálov fullerénov a vrstevnatých anorganických nosičov.
- Laboratory of Bioinorganic Chemistry, Institute of Inorganic Chemistry, Academy of Sciences of the Czech Republic, Řež, Česká republika, 19. - 23. 11. 2012 Pobyt prebehol v rámci MAD a bilaterálneho vedeckého projektu. Významným prínosom bola charakterizácia kinetiky niektorých fotofyzikálnych procesov pomocou časovorozišnej fluorescenčnej spektroskopie v

tenkých filmoch hybridných systémov vrstevnatého kremičitanu a organických farbív. Pobyt bol významný pre napĺňanie cieľov projektu APVV a predpokladáme, že výsledky budú súčasťou vedeckého článku.

Galusková Dagmar

- Technische Universität Darmstadt Institut für Materialwissenschaft Fachgebiet, Disperse Feststoffe Arbeitsgruppe Polymerkeramik, Darmstadt, Nemecko 4. 11. – 8. 12. 2012. Pobyt sa uskutočnil v rámci medzinárodného DAAD projektu: *Novel Hafnium Nitride- and Hafnium Diboride-Based Ceramic Nanocomposites – Preparation and High-Temperature Behavior in Harsh Environments*. Počas pobytu sa pripravil pre-keramický polymér určený pre prípravu hafnium nitridovej a diboridovej keramiky.

Kedžuch Stanislav

- Ústav fyzikální chemie J. Heyrovského AV ČR, 20.-25.5.2012, 24.-29.9.2012. Pobyt sa uskutočnil v rámci MAD medzi SAV a AV ČR. Spolupráca na vývoji multireferenčných explicitne korelovaných metód v rámci bežiacich projektov LPP-0343-09 (Multireferenčná teória spriahnutých klastrov v R12 priblížení) a GACR P208/11/2222 (Explicitně korelované multireferenční metody spřažených klastrů). Dokončenie publikácie Demel O., Kedžuch S., Švaňa M., Ten-no S., Pittner J., Noga J.; An explicitly correlated Mukherjee's state specific coupled cluster method: development and pilot applications. In Physical Chemistry Chemical Physics, 2012, vol. 14, p. 4753-4762. Implementácia multireferenčnej Mukherjee metódy v rámci teórie spriahnutých klastrov so zahrnutím triexcitácií Mk-MR-CCSD(T)-F12, testovanie a ladenie. Zahrnutie medzireferenčného spriahnutia pochádzajúceho z použitia podmienky korelačného hrotu v multireferenčnej funkcii.

Korenko Michal

- I.V. Tananayev Institute of Chemistry and Technology of Rare Elements and Mineral Raw Materials, Kola Science Center of Russian Academy of Sciences, Apatity, Rusko, 1. - 30. 6. 2012. Pobyt sa uskutočnil na základe MAD. Počas pobytu sa pomocou cyklickej voltametrie študovala elektrochemická redukcia samária v tavenine LiF-CaF₂.
- State Key Laboratory for Corrosion and Protection, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Čína, 12. - 26. 4. 2012. Pobyt sa uskutočnil na základe medziakademickej dohody medzi SAV a CAS. Počas pobytu sa študovala vysokoteplotná korózia kovových materiálov v prostredí fluoridových tavenín. V rámci uvedeného pobytu sa nadviazala aj spolupráca so School of Non-Ferrous Metallurgy, Nordeastern University Shenyang.

Křístková Anežka

- University of Tromsø, Nórsko, 22. 10 – 12. 11. 2012. Vedecká spolupráca pri vývoji kvantovo-chemického kódu ReSpect-mDKS.

Kubíková Blanka

- I.V. Tananayev Institute of Chemistry and Technology of Rare Elements and Mineral Raw Materials, Kola Science Center of Russian Academy of Sciences, Apatity, Rusko, 1. - 30. 6. 2012. Pobyt sa uskutočnil na základe MAD. Počas pobytu sa pomocou cyklickej voltametrie študovala elektrochemická redukcia samária v tavenine LiF-CaF₂.

Malkin Vladimir

- Paul Sabatier University, Toulouse, Francúzsko, 6. - 8. 12. 2012. Pobyt sa uskutočnil v rámci riešenia úloh bilaterálneho projektu APVV SK-FR-0018-11. Príprava spoločných publikácií.

Malkin Oľga

- Paul Sabatier University, Toulouse, Francúzsko, 6. - 8. 12. 2012. Pobyt sa uskutočnil v rámci riešenia úloh bilaterálneho projektu APVV SK-FR-0018-11. Príprava spoločných publikácií.

Madejová Jana

- Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poľsko, 10. - 14. 6. 2012. Pobyt sa uskutočnil v rámci medziakademickej spolupráce (MAD) medzi Ústavom anorganickej chémie SAV a Ústavom katalýzy a fyzikálnej chémie povrchov Poľskej akadémie vied v Krakowe. Náplňou práce bola príprava publikácie.

Pálková Helena

- Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poľsko, 10. - 21. 6. 2012. Pobyt sa uskutočnil v rámci medziakademickej spolupráce (MAD) medzi Ústavom anorganickej chémie SAV a Ústavom katalýzy a fyzikálnej chémie povrchov Poľskej akadémie vied v Krakowe. Náplňou práce bolo uskutočnenie experimentov zahrnutých v spoločnom projekte „Porous inorganic materials derived from layered silicates: synthesis, stability and functionality" ako aj príprava publikácie.

Prnová Anna

- Spoločný projekt v rámci bilatelárnej MVTs SR-Belgicko s Univerzitou Gent (University of Gent, Dep. Inorganic and Physical Chemistry, Gent University Krijgslaan 281 (S3), 9000 Gent, Belgium,) Gent, Belgicko, zameraný na prípravu amorfných a polykryštalických materiálov v systémoch $\text{Al}_2\text{O}_3\text{-La}_2\text{O}_3$, $\text{Al}_2\text{O}_3\text{-La}_2\text{O}_3\text{-ZrO}_2$ a $\text{CeO-L}_2\text{O}_3$.

Scholtzová Eva

- Universität für Bodenkultur Wien, Rakúsko, 22. – 29. 10. 2012 a 26. – 30. 11. 2012. Pobyt sa uskutočnil v rámci riešenia úloh bilaterálneho projektu SK-AT-0020-10. Počas pobytu sa zhodnotili výsledky dosiahnuté v tomto projekte, navrhli ďalšie spôsoby riešenia úloh a rozpracovala sa štruktúra publikácie.

Dlhodobé pobyty pracovníkov ústavu realizované na základe získania štipendií na riešenie projektov**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. 2012. Skúmanie vplyvu pozolánovej aktivity rôznych typov metakaolínov na vlastnosti vápenných mált pre rekonštrukciu historických budov. Vplyv ďalších aditív (sepiolit, palygorskit, zeolit) na zmenu mechanických vlastností pripravených mált.

Hanzel Ondrej

- Technische Universität Darmstadt, Disperse Feststoffe, Petersenstrasse 32, 64287 Darmstadt, Nemecko, 05.10 – 15.12. 2012. Pobyt sa uskutočnil na základe projektu DAAD. Počas pobytu sa skúmali oxidové a neoxidové keramické kompozitné materiály pomocou Ramanovej spektroskopie a tiež príprava práškov z polymérnych prekurzorov pre prípravu keramických materiálov.

Hrobárik Peter

- Institut für Chemie, Technische Universität Berlin (10. 2010 – 12. 2012). Postdoktorandský

výskumný pobyt v Nemecku podporovaný nadáciou Alexander von Humboldt a Berlínskym centrom excelentnosti "UniCat". Projekt bol zameraný na vývoj a aplikáciu nových relativistických metód pre výpočet a interpretáciu NMR spektier zlúčenín prechodných kovov, ako aj na štúdium štruktúry a reakčných mechanizmov významných priemyselných katalyzátorov.

Komorovský Stanislav

- Laboratoire de Chimie et Physique Quantiques, Université de Toulouse, Francúzsko, pobyt bol zameraný na teoretické štúdium narušenia parity v chirálnych molekulách. (01. 04. 2011 - 31. 03. 2012)
- The Centre for Theoretical and Computational Chemistry, Department of Chemistry, University of Tromsø, Nórsko, postdoktorandský výskumný pobyt (15. 5. 2012 – 14. 5. 2015)

Kubíková Blanka

- German Aerospace Center, Institute of Technical Thermodynamics, Stuttgart, Nemecko, 1.10. – 31. 12. 2012, DLR-DAAD fellowship No. 123. Pobyt súvisel s výskumom a aplikáciou halogenidových roztavených solí pre solárne kolektory.

Kucharík Marián

- Primary Metal Technology (PMT) - Technology development, Hydro Aluminium a.s. Årdal, Nórsko, projektový inžinier, 01. 11. 2008 – 31. 12. 2012. Výskum a vývoj technológie výroby hliníka Hall-Heroultovým procesom.

Michálek Martin

- Fachhochschule Münster - University of Applied Sciences, Nemecko, doktorandský výskumný pobyt (doktorand v oblasti konštrukčnej keramiky), 02. 2011 – 08. 2012. Funkcionalizácia uhlíkových nanorúrok (CNTs) s následnou homogénnou dispergáciou CNTs do keramickej matrice (Al_2O_3) s ohľadom na reologické vlastnosti suspenzií.

Micháľková Monika

- Fachhochschule Münster - University of Applied Sciences, Nemecko, postdoktorandský výskumný pobyt (vedecký pracovník v oblasti fotochémie), 02. 2011 – 01. 2012. Postavenie LED fotoreaktora a skúmanie fotochemických reakcií v oblasti UV žiarenia a modrého svetla. Využitie rozkladných fotochemických reakcií na prípravu častíc z roztoku.
- Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Švajčiarsko, 01. 02. 2012 – 31. 07. 2012, projekt SCIEX ElectroCeram, Príprava a vlastnosti kompozitov $\text{Si}_3\text{N}_4/\text{MgSiN}_2/\text{CNFs}$ pre elektronické súčiastky.

Martin Pentrák

- Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana, USA, Postdoctoral Research Associate, 04. 2012 – 09. 2014, výskum a vývoj nových progresívnych nanokompozitov na báze organoílov dôležitých pri riešení environmentálnych a priemyselných problémov, štúdium optických a termických vlastností prírodných nanomateriálov na báze ílových minerálov.

Linda Pentráková

- Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana, USA, Postdoctoral Research Associate, 04. 2012 – 09. 2014, výskum a vývoj nových progresívnych nanokompozitov na báze organoílov dôležitých pri riešení environmentálnych a

priemyselných problémov, štúdium optických a termických vlastností prírodných nanomateriálov na báze ílových minerálov.

Repiský Michal

- The Centre for Theoretical and Computational Chemistry, Department of Chemistry, University of Tromsø, Nórsko, postdoktorandský výskumný pobyt v rámci projektu "Norwegian Center of Excellence", 01. 01. 2010 – 31. 12. 2012.

Vetrecin Michal

- Technische Universität Darmstadt, Nemecko, 05. 10 – 15. 12. 2012. Pobyt sa uskutočnil na základe projektu DAAD. Počas pobytu boli pripravované keramické prekurzory Al-, Hf- a Lu-modifikované SiOC, ktoré sú skúmané z pohľadu ich využiteľnosti ako spekacej prísady a je skúmaný ich vplyv na vlastnosti výsledného keramického materiálu.

Prednášky zahraničných pracovníkov, ktorí navštívili ÚACH SAV

Dr. Hua-Tay LIN, Oak Ridge National Laboratory, Oak Ridge, USA
Reliability Assessment of Silicon Nitride Ceramics (24. máj 2012)

Ing. Milan Petrák, Výzkumný ústav anorganické chemie, a. s., Ústí nad Labem
Výzkumné aktivity (krátky úvod) (25. september 2012)

Ing. Petr Koutník, Výzkumný ústav anorganické chemie, a. s., Ústí nad Labem
Geopolymerní pojiva a jejich aplikace (25. september 2012)

RNDr. Marta Valášková, DrSc., Centrum nanotechnologií VŠB-Technická univerzita Ostrava
Vermikulit s funkčními účinky v nanomateriálech (27. november 2012)

Ing. Sylva Holešová, Ph.D., Centrum nanotechnologií VŠB-Technická univerzita Ostrava,
Antibakteriální organovermikulity (27. november 2012)

*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

Ústav má rozpracovanú vednú politiku, ktorá je založená na inovatívnosti vedeckého smerovania, ambicióznosti vedeckých osobností, ako aj autonómnosti vedúcich vedeckých tímov. Správnosť tohto smerovania dokumentuje aj vytipovanie špičkových a nadpriemerných tímov v SAV agentúrou ARRA, keď z ÚACH sa dva tímy umiestnili medzi špičkovými a jeden ako nadpriemerný. Akreditácia ústavu v kategórii A s vysokým bodovým hodnotením je ďalším dôkazom účinnej vednej politiky vedenia ústavu.

Projektové tímy

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

Personálna politika

V oblasti personálnej politiky sa ústavu dlhodobo darí udržať priemerný vek zamestnancov v rozpätí 40 až 45 rokov. Podpora zamestnávania mladých vedeckých pracovníkov patrí medzi prioritné úlohy vedenia ústavu. Pre zvýšenie počtu a **motivácie mladých absolventov doktorandského štúdia**, aby neodchádzali z oblasti vedy do finančne lukratívnejších zamestnaní, boli prijaté nasledujúce zásady personálnej politiky:

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

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: Fakulta matematiky, fyziky a informatiky UK

Druh spolupráce (spoločné pracovisko alebo iné): Spoločná výchova diplomantov

Začiatok spolupráce: 2001

Zameranie: účasť na Bc. a Mgr. výuke

Zhodnotenie: Pracovníci ÚACH viedli na FMFI UK v roku 2012 štyroch diplomantov.

Názov univerzity/vysokej školy a fakulty: Prírodovedecká fakulta UK

Druh spolupráce (spoločné pracovisko alebo iné): Spoločná výchova doktorandov, spoločné riešenie projektov, spolupráca v pedagogickom procese

Začiatok spolupráce: 1990

Zameranie: vedecká spolupráca, účasť na Bc. a Mgr. výuke

Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do vzdelávania na III. stupni vysokoškolského štúdia v študijných programoch anorganická chémia a chemická fyzika. Spoločne sa riešia projekty VEGA a APVV. Prof. RNDr. J. Noga, DrSc., RNDr. J. Bujdák, DrSc. a doc. RNDr. M. Drábik, CSc. majú hlavný úväzok na fakulte a čiastkový na ÚACH SAV. J. Noga je externým členom Vedeckej rady ÚACH SAV. Pracovníci ÚACH viedli na PríFUK v roku 2012 deviatich doktorandov.

Názov univerzity/vysokej školy a fakulty: Fakulta prírodných vied UMB

Druh spolupráce (spoločné pracovisko alebo iné): Spolupráca v rámci projektu Rozvoj znalostných a pedagogických kompetencií pracovníkov vedy a výskumu a doktorandov na UMB

Začiatok spolupráce: 2011

Zameranie: spolupráca na pedagogickom procese

Zhodnotenie: Absolvent tejto fakulty Mgr. Peter Boháč nastúpil v roku 2012 na internú doktorantúru na ÚACH a Prírodovedeckú fakultu UK v odbore Anorganická chémia.

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. Doc. Ing. D. Galusek, PhD. je vedúcim Oddelenia keramiky, skla a cementu. Pracovníci ÚACH viedli na FCHPT v roku 2012 štyroch doktorandov. FCHPT je partnerom ÚACH SAV v projekte Centrum pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach "MACHINA Etapa II", financovaných zo ŠF, OP VaV.

Názov univerzity/vysokej školy a fakulty: Hutnícka fakulta TUKE

Druh spolupráce (spoločné pracovisko alebo iné): Spolupráca v pedagogickom procese

Začiatok spolupráce: 2000

Zameranie: vedecká spolupráca, účasť na Bc. a Mgr. výuke

Zhodnotenie: V spolupráci s touto fakultou je ústav zapojený do pedagogického procesu. Prof. RNDr. P. Šajgalík, DrSc. je členom vedeckej rady fakulty.

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

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

Začiatok spolupráce: 1997

Zameranie: vedecká spolupráca

Zhodnotenie: Okrem spoločného pracoviska s TnU AD (Centrum kompetencie skla Vitrum Laugaritio) rieši ÚACH SAV v spolupráci s touto univerzitou spoločné projekty VEGA a dva spoločné projekty APVV. V spolupráci s TnU AD pripravil ústav dve žiadosti o nenávratný finančný príspevok v rámci Operačného programu VaV, z ktorých jeden, projekt „Centrum excelentnosti pre keramiku, sklo a silikátové materiály” akronym CEKSIM, ITMS kód 26220120056, bol schválený na financovanie so začiatkom riešenia projektu od 09/2010. Projekt financovaný v celkovej sume 3,9 milióna € je zameraný na vybudovanie centra v priestoroch TnU AD a na rozvíjanie ďalšej spolupráce medzi oboma inštitúciami. 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.

Názov univerzity/vysokej školy a fakulty: Vysoké učení technické, Brno

Druh spolupráce (spoločné pracovisko alebo iné): Spoločná výchova doktorandov, spoločné riešenie projektov, spolupráca v pedagogickom procese

Začiatok spolupráce: 2000

Zameranie: vedecká spolupráca, účasť na Bc. a Mgr. výuke

Zhodnotenie: V spolupráci s touto fakultou nie je v súčasnosti ústav zapojený do pedagogického procesu. S FCH VUT Brno ústav plánuje zriadiť spoločné pracovisko pre výskum a vývoj nanomateriálov. Prof. RNDr. P. Šajgalík, DrSc. je členom Vedeckej rady FCH VUT Brno.

Názov univerzity/vysokej školy a fakulty: Vysoká škola báňská - TU Ostrava, Česká republika

Druh spolupráce (spoločné pracovisko alebo iné): Spoločná výchova doktorandov, spoločné riešenie projektov

Začiatok spolupráce: 2010

Zameranie: vedecká spolupráca, výchova doktorandov

Zhodnotenie: Spolupráca VŠB a ÚACH je zameraná na výchovu mladých pracovníkov. Na ÚACH sa školia 3 doktorandky z VŠB Ostrava. Doc. Ing. M. Hnatko, PhD. a doc. Ing. Lenčěš, PhD. sú menovaní školiteľmi špecialistami týchto doktorandov. Prof. RNDr. P. Šajgalík, DrSc. je členom Vedeckej rady FMMI VŠB; doc. Ing. Z. Lenčěš, PhD. je členom odborovej rady doktorandského študijného programu Materiálové vedy a inžinýrství.

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

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.

Spoločné pracovisko FTIR spektroskopie: V rámci pracoviska sa dlhodobo využíva FTIR spektrometer Nicolet Magna 750, zakúpený z prostriedkov partnerov z ÚACH SAV, CHÚ SAV, FCHPT STU a PriF UK ako aj FTIR spektrometer Nicolet 6700 s príslušenstvom, financovaný z prostriedkov projektu APVV-VVCE (zod. riešiteľ P. Komadel), na ktorý čiastočne prispel aj CHÚ SAV. V roku 2012 bol v priestoroch spoločného pracoviska inštalovaný Ramanovský spektrometer

od firmy Thermo, ktorý, aj napriek tomu, že bol zakúpený výlučne z prostriedkov ŠF Chemického ústavu, môžu využívať aj zaškolení pracovníci z ÚACH.

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 LAUGARITIO

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

Zameranie: Stimulácia a rozvoj základného a aplikovaného výskumu

Rok založenia: 2004

Zhodnotenie: V roku 2012 pokračovala činnosť Centra kompetencie skla, 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 zušľachtovaním, a základný a aplikovaný výskum v oblasti pokročilých oxidových keramických a sklokeramických materiálov. V rámci centra v roku 2012 pokračovalo budovanie Centra excelentnosti pre keramiku, sklo a silikátové materiálov CEKSIM. Tento projekt je podporený čiastkou 3 976 900 €. ÚACH v spolupráci s RONA v rámci Operačného programu VaV rieši projekt s názvom "Priemyselný výskum pre potreby zefektívnenia unikátnej technológie tavenia a tvarovania úžitkového skla", akronym PVTECHSKLO. Finančné prostriedky tohto projektu sú v celkovej výške 1 400 281 €, z čoho pre ÚACH SAV pripadne 436 700 €. V rámci tohto projektu bolo zriadené aj spoločné pracovisko.

Názov pracoviska: Spoločné pracovisko Ústavu anorganickej chémie Slovenskej akadémie vied a RONA, a.s.

Partner(i): Rona a.s., Lednické Rovne

Zameranie: Stimulácia, rozvoj a realizácia základného a aplikovaného výskumu a vývoja v oblastiach súvisiacich s existujúcou priemyselnou základňou SR

Rok založenia: 2011

Zhodnotenie: V 05/2011 bola podpísaná partnerská zmluva a štatút Spoločného pracoviska medzi partnermi. Realizovalo sa hodnotenie úloh za prvých 12 mesiacov projektu a začala sa príprava programu pre ďalší rok projektu. Informácia o vzniku spoločného pracoviska ako aj výsledky jeho činnosti boli prezentované na tlačovej konferencii.

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): 2013

Objem získaných prostriedkov v bežnom roku (€): 12530

Stručný opis výstupu/výsledku: Vývoj nových žiaruvzdorných materiálov na báze Al₂O₃-SiAlON a MgO-MgAlON.

Zhodnotenie: Partner RHI AG predĺžil kontrakt s ÚACH SAV o ďalšie tri roky do roku 2013.

Názov kontraktu: Alternative Werkstoffe für Pumpenkomponenten

Partner(i): Materials Center Leoben, Austria; Andritz GmbH, Graz, Austria

Začiatok spolupráce (v súlade s podpísaným kontraktom): 2011

Ukončenie spolupráce (ak ide o spoluprácu v krátkom období): 2013

Objem získaných prostriedkov v bežnom roku (€): 17020

Stručný opis výstupu/výsledku: Testy využiteľnosti MDF materiálov a technológií pre inovatívne materiály v pumpách a ich komponentoch.

Zhodnotenie: Partner Materials Center Leoben potvrdil aktualizáciu úloh a kontrakt do roku 2013.

7.3. Iná činnosť využiteľná pre potreby hospodárskej praxe

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

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

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

Meno pracovníka	Názov orgánu	Funkcia
doc. Ing. Dušan Galusek, PhD.	Komisia pre námietky pri verejnom obstarávaní	externý člen
Mgr. Stanislav Kedžuch, PhD.	Slovenská komisia chemickej olympiády	člen
Ing. Michal Korenko, PhD.	Komisia pre námietky pri verejnom obstarávaní	externý člen
prof. RNDr. Jozef Noga, DrSc.	Akreditačná komisia SR	člen pracovnej skupiny pre oblasť výskumu Chémia, chemická technológia a biotechnológie
prof. RNDr. Pavol Šajgalík, DrSc.	Agentúra na podporu výskumu a vývoja - komisia pre nový spôsob hodnotenia projektov	predseda
	Slovenská komisia pre vedecké hodnosti (SKVH)	predseda
	Komisia ministra školstva pre udeľovanie Ceny ministra školstva	člen
	Komisia MŠ na vyhodnocovanie žiadostí o stimuly na výskum a vývoj	člen komisie
	Komisia MŠ pre prioritné oblasti aplikovaného výskumu a experimentálneho vývoja v SR	člen pracovnej skupiny
	Agentúra na podporu výskumu a vývoja - podpora prípravy projektov 7. Rámcového programu výskumu a vývoja	člen komisie
	Rada predsedov expertných pracovných skupín pre prípravu strategického dokumentu „Stratégia výskumu a vývoja v SR do roku 2012	predseda rady predsedov
Ing. Daniel Tunega, CSc.	Akreditačná komisia SR	člen pracovnej skupiny pre oblasť výskumu Chémia, chemická technológia a biotechnológie

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

Názov expertízy: Člen slovenskej delegácie na Medzinárodnej chemickej olympiáde

Adresát expertízy: Ministerstvo školstva, vedy, výskumu a športu SR

Spracoval: RNDr. Juraj Bujdák, DrSc.

Stručný opis: vyslaný MŠVVaŠ SR ako člen delegácie na Medzinárodnej chemickej olympiáde, ktorá bola organizovaná Univerzitou v Marylande (21. - 31. 7.2012)

Názov expertízy: Spoluautor úloh Chemickej olympiády

Adresát expertízy: Ministerstvo školstva, vedy, výskumu a športu SR

Spracoval: Mgr. Stanislav Kedžuch, PhD.

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

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

Meno pracovníka	Názov orgánu	Funkcia
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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

-

9. Vedecko-organizačné a popularizačné aktivity

9.1. Vedecko-popularizačná činnosť

9.1.1. Najvýznamnejšia vedecko-popularizačná činnosť pracovníkov organizácie SAV

Tabuľka 9a Vedecko-popularizačná činnosť pracovníkov organizácie SAV

Meno	Typ ¹	Názov	Miesto zverejnenia	Dátum alebo počet za rok
Miroslav Boča	PB	Každodenná chémia (Prednáška pre žiakov siedmeho ročníka všetkých základných škôl v Petržalke v rámci projektu Petržalská superškola Veda nie je nuda)	DK Zrkadlový háj, Bratislava-Petržalka	19.12.2012
Milan Drábik	TL	64. Zjazd chemikov sa konal v Olomouci	ChemZi 8/2	2012
	TL	Dva nové prvky Periodickej sústavy prvkov objavené a potvrdené	ChemZi 8/2	2012
Vladimír Malkin Olga Malkin	TL	Rozhovor pre argentínske noviny	El Litoral Corrientes	16.9.2012
Pavol Šajgalík	TL	Čo majú spoločné najstaršia Venuša a nepriestrelný pancier	Denník Pravda (http://dennik.pravda.sk/Pravda.aspx?datum=25.2.2012#32)	25.2.2012
	TL	Chemik Šajgalík: Neutrína zdvihli zo stoličiek nielen fyzikov	Denník SME	11.1.2012
	IN	Prezentácia osobností vedy na Noci výskumníka	http://www.sovva.sk/noc-vyskumnikov/2012/portrety-vedcov/veda-je-zivot/prof-pavol-sajgalik.html	28.9.2012
Stanislav Kedžuch	iné	Odborné sústreďenia z chémie, biológie a prírodných vied pre študentov základných a stredných škôl (5.-18.6.2012)	Bardejov	3
	TL	Úlohy zo všeobecnej a fyzikálnej chémie (II), Riešenie a hodnotenie úloh zo všeobecnej a fyzikálnej chémie (II)	CHEMICKÉ ROZHĽADY, 1/2012	1
Michal Korenko	TL	Stručná pre – história chémie	ChemZi, 2/2012	1
Jozef Noga	PB	Úvod do kvantovania	Odborné sústreďenie z chémie pre stredné školy 6.-7.6. 2012 (2 prednášky)	2012

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

9.1.2. Súhrnné počty vedecko-popularizačných činností organizácie SAV

Tabuľka 9b Súhrnné počty vedecko-popularizačných činností organizácie SAV

Typ	Počet	Typ	Počet	Typ	Počet
prednášky/besedy	2	tlač	7	TV	0
rozhlas	0	internet	1	exkurzie	1
publikácie	0	multimediálne nosiče	0	dokumentárne filmy	0
iné	1				

9.2. Vedecko-organizačná činnosť

Tabuľka 9c Vedecko-organizačná činnosť

Názov podujatia	Domáca/ medzinárodná	Miesto	Dátum konania	Počet účastníkov
Workshop on Modern Methods in Quantum Chemistry	medzinárodná	Mariapfarr, Austria	26.02.-02.03.2012	-

9.3. Účasť na výstavách

Názov výstavy: Týždeň vedy a techniky – Popularizácia vedy a techniky v spoločnosti

Miesto konania: INCHEBA – EXPO Bratislava

Dátum: 7.11.2012

Zhodnotenie účasti: V dňoch 7. – 11. novembra 2012 sa uskutočnila prezentácia výsledkov činnosti Centra excelentnosti pre keramiku, sklo a silikátové materiály (CEKSiM), ako aj Centier excelentnosti výskumu ako súčasť podujatia „Týždeň vedy a techniky na Slovensku v roku 2012“. V rámci Centra pre materiály, vrstvy a systémy pre aplikácie a chemické procesy v extrémnych podmienkach (ďalej len CE MACHINA) sa výstavy zúčastnili pracoviská centra (ÚACH SAV, ÚPo SAV, ChÚ SAV, FCHPT STU). Návštevníci mali možnosť dozvedieť sa základné informácie o cieľoch projektu, nových prístrojoch získaných prostredníctvom CE MACHINA a v neposlednom rade, tam bola možnosť pozrieť si ukážky rôznych progresívnych materiálov pripravených na ÚACH a ÚPo SAV. Dňa 07.11.2012 sme v našom stánku mali možnosť privítať komisiu, ktorá vyhodnocovala najlepšieho vystavovateľa spolu so štátnym tajomníkom MŠVVaŠ SR.

Názov výstavy: Noc výskumníka

Miesto konania: Stará tržnica, Bratislava

Dátum: 28.9.2012

Zhodnotenie účasti: V rámci Noci výskumníka prezentovalo Oddelenie keramiky výsledok svojho dlhoročného vývoja špecifického pecného zariadenia. Laboratórny žiarový lis umožňuje prípravu hutných keramických a iných materiálov spekaním práškov, za súčasného pôsobenia teploty, axiálneho tlaku v inertnej atmosfére alebo vo vákuu. Žiarový lis "ONE" je po konštrukčnej stránke originálny a reflektuje požiadavky súčasnej doby na zníženie energetickej záťaže prostredia. Energetická náročnosť na 1 pokus je zredukovaná o 77%. Prieskum trhu ukazuje, že technológie tohto typu boli v minulosti pre svoju finančnú, priestorovú a materiálovú náročnosť využívané hlavne veľkými spoločnosťami, ktoré si ich mohli finančne dovoliť. Zariadenie umožňuje úsporné, rýchle a zároveň vysoko účinné vytvorenie vzoriek na testovanie materiálov aj v podmienkach menších laboratórií.

9.4. Účasť v programových a organizačných výboroch národných konferencií

Tabuľka 9d Programové a organizačné výbory národných konferencií

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

9.5. Členstvo v redakčných radách časopisov

doc. Ing. Miroslav Boča, PhD.

Chemical Papers (funkcia: Associate editor pre anorganickú chémiu)

doc. RNDr. Milan Drábik, CSc.

Ceramics-Silikáty (funkcia: člen)

ChemZi (funkcia: člen)

doc. Ing. Dušan Galusek, PhD.

Ceramics-Silikáty (funkcia: člen)

New Journal of Glass and Ceramics (funkcia: člen)

RNDr. Peter Komadel, DrSc.

Applied Clay Science (funkcia: člen)

Clay Minerals (funkcia: člen)

Geologica Carpathica (funkcia: člen)

prof. Ing. Marek Liška, DrSc.

Ceramics - Silikáty (funkcia: člen)

European Journal of Glass Science and Technology (funkcia: regional editor)

International Journal of Applied Glass Science (funkcia: člen)

Sklář a keramik (funkcia: člen)

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)

9.6. Činnosť v domácich vedeckých spoločnostiach

Mgr. Slávka Andrejkovičová, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Ing. Peter Barborík

Slovenská chemická spoločnosť (funkcia: člen)

Mgr. Valéria Bizovská

Slovenská ílová spoločnosť (funkcia: člen)

doc. Ing. Miroslav Boča, PhD.

Humboldtov klub v SR (funkcia: člen)

Slovenská chemická spoločnosť (funkcia: člen)

Mgr. Anna Brtáňová

Slovenská ílová spoločnosť (funkcia: člen)

RNDr. Juraj Bujdák, DrSc.

Slovenská chemická spoločnosť (funkcia: člen)

Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Adriana Czímerová, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Alexander Čeklovský, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Slovenská spektroskopická spoločnosť (funkcia: člen)

doc. RNDr. Milan Drábik, CSc.

Asociácia slovenských chemických a farmaceutických spoločností (ASCHFS) (funkcia: predseda)

Slovenská chemická spoločnosť (funkcia: podpredseda 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)

Ing. Dagmar Galusková, PhD.

Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Slovenská Sklárska spoločnosť (funkcia: člen predstavenstva)

Ing. Veronika Gurišová

Slovenská chemická spoločnosť (funkcia: člen)

Ing. Mária Chromčíková, PhD.

Česká sklárska spoločnosť (funkcia: člen)

Slovenská sklárska spoločnosť (funkcia: člen)

Mgr. Ľuboš Jankovič, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Mgr. Stanislav Kedžuch, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

RNDr. Peter Komadel, DrSc.

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

Slovenská ílová spoločnosť (funkcia: podpredseda)

Učená spoločnosť SAV (funkcia: člen)

Ing. Michal Korenko, PhD.

Slovenská chemická spoločnosť (funkcia: predseda revíznej komisie)

Slovenská nukleárna spoločnosť (funkcia: člen)

Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Slovenská spoločnosť pre povrchové úpravy (funkcia: člen)

Ing. Jozef Kraxner, PhD.

Slovenská sklárska spoločnosť (funkcia: člen)

Ing. Blanka Kubíková, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

Ing. Marián Kucharík, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

doc. Ing. Zoltán Lenčoš, PhD.

Humboldtov klub v SR (funkcia: člen)

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

prof. Ing. Marek Liška, DrSc.

Slovenská chemická spoločnosť (funkcia: člen)

Slovenská sklárska spoločnosť (funkcia: člen)

RNDr. Jana Madejová, DrSc.

Slovenská chemická spoločnosť (funkcia: člen)

Slovenská ílová spoločnosť (funkcia: predseda)

Učená spoločnosť SAV (funkcia: člen)

Ing. Zuzana Netriová, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

prof. RNDr. Jozef Noga, DrSc.

Humboldtov klub v SR (funkcia: člen)

Slovenská akademická spoločnosť (funkcia: podpredseda)

Učená spoločnosť SAV (funkcia: vedecký tajomník)

Ing. Helena Pálková, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Ing. Viliam Pavlík, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

Ing. Martin Pentrák, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Ing. Anna Prnová, PhD.

Slovenská Sklárska spoločnosť (funkcia: člen)

Ing. Jaroslav Sedláček, PhD.

Slovenská silikátová vedecko-technická spoločnosť (funkcia: člen)

Ing. Eva Scholtzová, CSc.

Slovenská chemická spoločnosť (funkcia: člen)

Slovenská ílová spoločnosť (funkcia: člen)

prof. RNDr. Pavol Šajgalík, DrSc.

Humboldtov klub v SR (funkcia: člen)

Slovenská chemická spoločnosť (funkcia: člen)

Slovenská silikátová vedecko-technická spoločnosť (funkcia: predseda)

Slovenská sklárska spoločnosť (funkcia: člen predstavenstva)

Učená spoločnosť SAV (funkcia: člen)

Ing. František Šimko, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

doc. Ing. Peter Šimurka, PhD.

Slovenská sklárska spoločnosť (funkcia: predseda)

Zväz slovenských vedecko-technických spoločností (funkcia: člen rady)

Mgr. Peter Švančárek, PhD.

Slovenská sklárska spoločnosť (funkcia: člen)

Ing. Jana Valúchová, PhD.

Slovenská ílová spoločnosť (funkcia: člen)

Ing. Zuzana Vasková, PhD.

Slovenská chemická spoločnosť (funkcia: člen)

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

Jednou z najvýznamnejších popularizačných aktivít ústavu sú „**Korešpondenčné semináre z chémie a biológie pre stredné školy a seminár z prírodných vied pre základné školy**“, ktoré sú organizované v rámci spoločného projektu ÚACH SAV (hlavný riešiteľ S. Kedžuch) a PríF UK. Je to súbor vedomostných súťaží, prebiehajúcich na celoštátnej úrovni, v rámci ktorých sa úlohy distribuujú na školy poštou (vo forme brožúr) alebo on-line formou (vo forme webovej aplikácie). Zadané úloh sú zamerané na atraktívne a dynamicky sa rozvíjajúce oblasti biológie a chémie resp. na prírodovedné predmety základných škôl, pričom ich riešenie je zamerané na využitie kreatívneho a logického myslenia. V školských rokoch 2011/2012 a 2012/2013 sa do súťaží zatiaľ zapojilo približne 9600 žiakov základných škôl a 930 študentov stredných škôl. Najúspešnejší žiaci/študenti boli pozvaní na odborné sústreďenie (z chémie, biológie a prírodných vied). V roku 2012 sa týchto sústreďení zúčastnilo 106 študentov.

Dňa 8.11.2012 pripravil Ústav anorganickej chémie SAV v rámci Týždňa vedy a techniky na Slovensku 2012 „**Deň otvorených dverí ÚACH SAV**“. Celodenný program začal krátkym privítaním návštevníkov vo vestibule budovy a ich oboznámením s pripraveným programom. Ten zahŕňal návštevu vybraných laboratórií s odborným výkladom prezentujúcim zameranie jednotlivých oddelení ústavu. Návštevníci sa oboznámili s prístrojovým vybavením pracoviska a boli im priamo predvedené praktické ukážky meraní na experimentálnych zariadeniach ako aj praktické ukážky niektorých zaujímavých chemických experimentov. Už tradične zaujala prezentácia zameraná na výsledky, ktoré sa získali z meraní na skenovacím elektrónovom mikroskope pri skúmaní mikroštruktúrnych vlastností látok alebo využitie spektroskopických metód v materiálovom výskume. Pre návštevníkov bola pripravená krátka prezentácia o využití výpočtovej techniky pri riešení problémov v chémii s názvom „Chémia v počítači“. Počas celého dňa bolo možné sledovať vývesné tabule s tematikou výskumu ústavu. K dispozícii boli propagačné materiály a výtlačky vedeckých časopisov. Pre hostí bolo počas celého dňa zabezpečené malé občerstvenie. DOD 2012 sa zúčastnilo okolo 180 študentov z bratislavských aj mimobratavských stredných a vysokých škôl. Súčasťou dňa otvorených dverí ÚACH SAV bola aj expozícia produktov výskumu ústavu na výstave „Týždeň vedy a techniky – Popularizácia vedy a techniky v spoločnosti“, ktorá sa konala v INCHEBE.

10. Činnosť knižnično-informačného pracoviska

10.1. Knižničný fond

Tabuľka 10a Knižničný fond

Knižničné jednotky spolu		7501
	knihy a zviazané periodiká	7501
	audiovizuálne dokumenty	
z toho	elektronické dokumenty (vrátane digitálnych)	
	mikroformy	
	iné špeciálne dokumenty - dizertácie, výskumné správy	
Počet titulov dochádzajúcich periodík		3
z toho zahraničné periodiká		3
Ročný prírastok knižničných jednotiek		18
	kúpou	18
	darom	
v tom	výmenou	
	bezodplatným prevodom	
Úbytky knižničných jednotiek		
Knižničné jednotky spracované automatizovane		

10.2. Výpožičky a služby

Tabuľka 10b Výpožičky a služby

Výpožičky spolu		97
	odborná literatúra pre dospelých	9
z toho	výpožičky periodík	87
	prezenčné výpožičky	
MVS iným knižniciam		
MVS z iných knižníc		
MMVS iným knižniciam		
MMVS z iných knižníc		1
Počet vypracovaných bibliografií		
Počet vypracovaných rešerší		

10.3. Používatelia

Tabuľka 10c Užívatelia

Registrovaní používatelia		
Návštevníci knižnice spolu (bez návštevníkov podujatí)		116

10.4. Iné údaje**Tabuľka 10d Iné údaje**

On-line katalóg knižnice na internete (1=áno, 0=nie)	0
Náklady na nákup knižničného fondu v €	2262,36

10.5. Iné informácie o knižničnej činnosti**11. Aktivity v orgánoch SAV****11.1. Členstvo vo Výbore Snemu SAV****11.2. Členstvo v Predsedníctve SAV a vo Vedeckej rade SAV**

prof. RNDr. Pavol Šajgalík, DrSc.

- Predseda rady riaditeľov 2. Oddelenia vied

11.3. Členstvo vo vedeckých kolégiách SAV

RNDr. Peter Komadel, DrSc.

- VK SAV pre chemické vedy (predseda)

RNDr. Jana Madejová, DrSc.

- VK SAV pre chemické vedy (člen)

prof. RNDr. Jozef Noga, DrSc.

- VK SAV pre chemické vedy (člen)

prof. RNDr. Pavol Šajgalík, DrSc.

- VK SAV pre chemické vedy (člen)

11.4. Členstvo v komisiách SAV

prof. RNDr. Jozef Noga, DrSc.

- Komisia SAV pre spoluprácu s vysokými školami (člen)

prof. RNDr. Pavol Šajgalík, DrSc.

- Komisia SAV pre vednú politiku a prognózy vývoja vedy a spoločnosti (člen)

11.5. Členstvo v orgánoch VEGA

doc. Ing. Miroslav Boča, PhD.

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

doc. Ing. Dušan Galusek, PhD.

- VEGA č. 7 pre strojárstvo a príbuzné odbory informačných a komunikačných technológií a materiálové inžinierstvo. (2008 – 2012) (člen)

RNDr. Jana Madejová, DrSc.

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

Dr. Oľga Malkin, DrSc.

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

12. Hospodárenie organizácie

12.1. Výdavky RO SAV

Tabuľka 12a Výdavky RO SAV (v €)

Kategória	Posledný upravený rozpočet r. 2012	Čerpanie k 31.12.2012 celkom	z toho:	
			z rozpočtu	z mimoroz. zdrojov
Výdavky spolu	4289463	5 428 779	4 289 454	1 139 325
z toho:				
- kapitálové výdavky	2 931 295	3 430 363	2 931 294	499 069
- bežné výdavky	1 358 168	1 998 416	1 358 160	640 256
z toho:				
- mzdové výdavky	693 817	829 920	693 817	136 103
- odvody do poisťovní a NÚP	239 966	284 507	239 966	44 541
- tovary a ďalšie služby	424 385	883 989	424 377	459 612
z toho:				
- výdavky na projekty (VEGA, APVV, ŠPVV, MVTP, ESF)	349 601	809 205	349 593	459 612
- výdavky na periodickú tlač				
- transfery na vedeckú výchovu	74 784	74 784	74 784	0

12.2. Príjmy RO SAV

Tabuľka 12b Príjmy RO SAV (v €)

Kategória	Posledný upravený rozpočet r. 2012	Plnenie k 31.12.2012
Príjmy spolu:	3 284	3 284
z toho:		
rozpočtované príjmy (účet 19)	3 284	3 284
z toho:		
- príjmy za nájomné	0	0
mimorozpočtové príjmy (účet 780)	0	0

13. Nadácie a fondy pri organizácii SAV

14. Iné významné činnosti organizácie SAV

prof. RNDr. Pavol Šajgalík, DrSc.

- 1) člen vedeckej delegácie sprevádzajúcej prezidenta SR na oficiálnej návšteve Japonska; mestá: Sendai, Tokyo, Osaka, Kyoto; 25. 06. – 01. 07. 2012
- 2) člen vedeckej delegácie sprevádzajúcej prezidenta SR na oficiálnej návšteve Holandského kráľovstva; mestá: Amsterdam, Haag, Helmond, Eindhoven; 20. 11. – 22. 11. 2012
- 3) člen delegácie štátneho tajomníka Ministerstva školstva, vedy, výskumu a športu SR na stretnutí o spolupráci medzi Matador Holding, a. s. a IWU Fraunhofer Institute. Na stretnutí zastupoval predsedu SAV prof. J. Pastoreka. Nemecko, Chemnitz; 26. 09. – 27. 09. 2012

15. Vyznamenania, ocenenia a ceny udelené pracovníkom organizácie v roku 2012

15.1. Domáce ocenenia

15.1.1. Ocenenia SAV

Drábik Milan

Medaila Slovenskej chemickej spoločnosti pri SAV

Oceňovateľ: Slovenská chemická spoločnosť pri SAV

Opis: Udelená za výnimočný prínos pre chemickú komunitu na Slovensku a v zahraničí.

15.1.2. Iné domáce ocenenia

Malkin Oľga

Prémia za trojročný vedecký ohlas (2. miesto)

Oceňovateľ: Literárny fond, Sekcia pre vedeckú a odbornú literatúru a počítačové programy

Šajgalík Pavol

Pamätaná medaila pri príležitosti 60. výročia založenia fakulty a za prínos k rozvoju fakulty a za spoluprácu

Oceňovateľ: TU v Košiciach, Hutnícka Fakulta

15.2. Medzinárodné ocenenia

Bizovská Valéria

Award for the student-poster competition (2. miesto)

Oceňovateľ: Vedecký výbor 6. MECC

Opis: Udelené na medzinárodnej konferencii 6th Mid-European Clay Conference, Praha-Průhonice, Česká republika

Brťáňová Anna

Award for the student-poster competition (3. miesto)

Oceňovateľ: vedecký výbor 6. MECC

Opis: Udelené na medzinárodnej konferencii 6th Mid-European Clay Conference, Praha-Průhonice, Česká republika

Chromčíková Mária

The best poster presentation (3. miesto)

Oceňovateľ: vedecký výbor ESAS

Opis: European Symposium on Atomic Spectrometry 2012 and XX. Slovak-Czech Spectroscopic Conference

Šajgalík Pavol

Ústav anorganickej chémie SAV za „Laboratórny žiarový lis ONE!“

Oceňovateľ: Medzinárodná porota tvorená expertmi na duševné vlastníctvo z relevantných vedeckých, patentových a technologických inštitúcií z Taiwanu, Japonska, Veľkej Británie a Švajčiarska na Taipei Internationala

Opis: Za priemyselné využitie patentovaných technológií, vďaka ktorým je možné dosiahnuť významný technologický pokrok a zabezpečiť trvalo udržateľný rast hospodárstva založeného na vedeckých poznatkoch

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

Ústav je zapojený do desiatich projektov ŠF EÚ v operačnom programe VaV. Problémy s neflexibilitou a prebyrokratizovanosťou ASFEU sú už notoricky známe a dokonca medializované aj najvyššími predstaviteľmi decíznej sféry. Napriek tomu k náprave v tejto oblasti nedošlo. Dokonca sa problémy s ASFEU vyvíjajú do ešte absurdnejších rozmerov. Ako modelový príklad by mohla slúžiť nasledovná skúsenosť ÚACH.

Agentúra systematicky zneoprávňuje mzdové výdavky pre pracovníka ústavu vzhľadom na fakt, že pracovník ústavu Ing. F. Šimko, PhD. (100 % úväzok zo ŠF) v pracovnom výkaze uviedol služobnú cestu na vedecké podujatie do Brna, ktorá bola navyše financovaná z prostriedkov VEGA. Agentúra argumentuje tým, že pracovník na 100 % úväzku zo ŠF nesmie vykonávať činnosť na iných projektoch a nesmie byť ani z nich financovaný.

Absurdita tohto názoru spočíva v dvoch rovinách; tá prvá je logická, pretože základným cieľom projektov ŠF je zvýšenie konkurencieschopnosti vedy na Slovensku v získavaní prostriedkov na vedu a výskum. Druhej roviny chýba akákoľvek logika. Prostriedky VEGA sú interné prostriedky kapitoly SAV, len sú distribuované zásluhovým spôsobom a nie paušálnym rozpisom. Je to interná záležitosť SAV. Teda, Ing. F. Šimko, PhD., prísne vzaté, použil na svoju cestu do Brna inštitucionálne prostriedky, také isté ako sú inštitucionálne prostriedky, ktorými ústav kryje náklady na teplo, elektrickú energiu, zariadenie kancelárie, výpočtovú techniku a náklady (a to nesmierne vysoké) na administratívne spracovanie požiadaviek ASFEU, týkajúce sa F. Šimka. Ak by táto cesta bola zaúčtovaná ako režijný výdavok ústavu agentúra tvrdí, že by s tým nemala problém. Okrem toho, že agentúra zneoprávnila všetky mzdové výdavky tohto zamestnanca aj spätne a aj v mesiacoch, v ktorých nikam nevycestoval, hrubo porušila jeho ústavné právo odmeny za vykonanú prácu. Ešte zarážajúcejší je fakt, že prezentované výsledky sa týkali riešenia projektu.

Agentúra navyše nerešpektuje právne normy SR, kde má zamestnanec právo pracovať aj na inom projekte a to nad rámec 100 % úväzku.

Iným absurdným príkladom je žiadosť agentúry na odstránenie servera z výpočtového strediska. Server bol obstaraný v rámci projektu. Agentúra tvrdí, že umiestnenie servera nie je v mieste realizácie projektu. Toto miesto realizácie sa vzťahuje na poštovú adresu so smerovým číslom ústavu, čo je v podstate poštový priečinok na pošte. Podľa tejto interpretácie by sme všetky obstarané prístroje mali umiestniť do tohto poštového priečinku.

Takýchto príkladov by sme mohli uviesť veľmi veľa. Vedenie SAV by mohlo váhou svojej authority pomôcť riešiteľom projektov ŠF vyriešiť aspoň problémy týkajúce sa prostriedkov VEGA vo vzťahu k ASFEU.

Správu o činnosti organizácie SAV spracoval(i):

Zdena Kapišinská, 02/59410401

RNDr. Jana Madejová, DrSc., 02/59410406

Ing. Helena Pálková, PhD., 02/59410485

Riaditeľ organizácie SAV:

.....
prof. RNDr. Pavol Šajgalík, DrSc.

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Prílohy**Príloha A - Zoznam zamestnancov a doktorandov organizácie k 31.12.2012****Zoznam zamestnancov podľa štruktúry (nadväzne na údaje v Tabuľke 1a)**

	Meno s titulmi	Úväzok (v %)	Ročný prepočítaný úväzok
Vedúci vedeckí pracovníci DrSc.			
1.	RNDr. Juraj Bujdák, DrSc.	50	0.50
2.	RNDr. Peter Komadel, DrSc.	100	1.00
3.	prof. Ing. Marek Liška, DrSc.	45	0.45
4.	RNDr. Jana Madejová, DrSc.	100	1.00
5.	Dr. Oľga Malkin, DrSc.	100	1.00
6.	Dr. Vladimír Malkin, DrSc.	100	1.00
7.	prof. RNDr. Jozef Noga, DrSc.	53	0.53
8.	prof. RNDr. Pavol Šajgalík, DrSc.	100	1.00
Samostatní vedeckí pracovníci			
1.	doc. Ing. Miroslav Boča, PhD.	100	1.00
2.	Mgr. Adriana Czímerová, PhD.	100	1.00
3.	doc. RNDr. Milan Drábik, CSc.	50	0.50
4.	doc. Ing. Dušan Galusek, PhD.	100	1.00
5.	doc. Ing. Miroslav Hnatko, PhD.	100	1.00
6.	Mgr. Ľuboš Jankovič, PhD.	100	1.00
7.	Ing. Štefan Kavecký, CSc.	33	0.33
8.	Mgr. Stanislav Kedžuch, PhD.	100	1.00
9.	Ing. Róbert Klement, PhD.	27	0.27
10.	doc. Ing. Zoltán Lenčేశ, PhD.	100	1.00
11.	doc. Ing. Pavel Mach, CSc.	25	0.25
12.	Ing. Ivan Nerád, CSc.	100	1.00
13.	Ing. Helena Pálková, PhD.	100	1.00
14.	Ing. Jaroslav Sedláček, PhD.	100	1.00
15.	Ing. Eva Scholtzová, CSc.	100	1.00
16.	RNDr. Ľubomír Smrčok, CSc.	100	1.00
17.	Mgr. Peter Švančárek, PhD.	100	1.00
Vedeckí pracovníci			
1.	James Richard Asher, PhD	100	1.00
2.	Ing. Katarína Bodišová, PhD.	100	1.00

3.	doc. Ing. Tomáš Bučko, PhD.	25	0.25
4.	Mgr. Alexander Čeklovský, PhD.	100	1.00
5.	Ing. Františka Frajkorová, PhD.	100	0.66
6.	Ing. Dagmar Galusková, PhD.	13	0.13
7.	Mgr. Peter Hrobárik, PhD.	0	0.00
8.	Ing. Mária Chromčíková, PhD.	100	1.00
9.	Mgr. Stanislav Komorovský, PhD.	100	0.00
10.	Ing. Michal Korenko, PhD.	100	1.00
11.	Ing. Jozef Kraxner, PhD.	100	0.45
12.	Ing. Blanka Kubíková, PhD.	100	1.00
13.	Ing. Marián Kucharík, PhD.	0	0.00
14.	Ing. Monika Micháľková, PhD.	100	0.40
15.	Ing. Jarmila Mlynáriková, PhD.	100	0.25
16.	Ing. Zuzana Netriová, PhD.	0	0.00
17.	Ing. Viliam Pavlík, PhD.	100	1.00
18.	Ing. Martin Pentrák, PhD.	100	0.33
19.	Ing. Linda Pentráková, PhD.	100	0.50
20.	doc. Ing. Alfonz Plško, CSc.	28	0.28
21.	Ing. Anna Prnová, PhD.	100	1.00
22.	Mgr. Michal Repiský, PhD.	0	0.00
23.	Ing. František Šimko, PhD.	100	1.00
24.	doc. Ing. Peter Šimurka, PhD.	100	1.00
25.	Ing. Jana Valúchová, PhD.	100	1.00
26.	Ing. Štefan Varga, CSc.	100	1.00
27.	Ing. Zuzana Vasková, PhD.	100	1.00
28.	Ing. Martin Vitkovič, PhD.	100	1.00
Odborní pracovníci s VŠ vzdelaním			
1.	Bc. Martina Bukovská	100	1.00
2.	Ing. Katarína Faturíková, PhD.	100	1.00
3.	prom.farm. Ľubica Gáliková	100	0.50
4.	Ing. Veronika Gurišová	100	1.00
5.	Ing. Tomáš Hanulík	28	0.28
6.	Ing. Ingrid Hierwegová	94	0.94
7.	Bc. Katarína Hlavačková	80	0.80
8.	Ing. Monika Hrabalová	100	1.00

9.	MSc. Ismail Ibrahim	100	0.58
10.	Mgr. Natália Jamrichová	100	1.00
11.	Ing. Petra Jeřábková	100	0.33
12.	Ing. Hana Kaňková	20	0.20
13.	Ing. Ľubomír Koleda	100	1.00
14.	Ing. Iveta Macková	100	1.00
15.	Ing. Eva Mikšíková	125	1.25
16.	Ing. Ján Piško	100	1.00
17.	Ing. Jozef Priščák	100	1.00
18.	Ing. Zuzana Slobodová	100	1.00
19.	Ing. Katarína Šovčíková	40	0.40
20.	Ing. Eva Špyrková	100	1.00
21.	Ing. Jana Vokelová	100	0.50
Odborní pracovníci ÚSV			
1.	Miroslav Baďura	20	0.20
2.	Iveta Bouadjenak	100	1.00
3.	Jaromíra Dankovičová	125	1.25
4.	Jarmila Heinleinová	100	1.00
5.	Miriám Hnatková	100	0.33
6.	Anna Jurová	100	1.00
7.	Zdena Kapišinská	100	1.00
8.	Magdaléna Kňazovičová	100	0.50
9.	Anna Kovárová	100	1.00
10.	Zora Lukáčová	100	0.50
11.	Jozef Sitár	100	1.00
12.	Anna Škumátová	100	1.00
13.	Alexandra Tonkovičová	0	0.00
Ostatní pracovníci			
1.	Dana Matejkinová	100	1.00
2.	Terézia Pírová	100	1.00

Zoznam zamestnancov, ktorí odišli v priebehu roka

	Meno s titulmi	Dátum odchodu	Ročný úväzok	prepočítaný
Vedeckí pracovníci				
1.	Mgr. Slávka Andrejkovičová, PhD.	30.6.2012	0.00	

2.	Ing. Jozef Chovanec, PhD.	14.5.2012	0.25
3.	Ing. Tomáš Plachký, PhD.	31.7.2012	0.70
Odborní pracovníci s VŠ vzdelaním			
1.	Ing. Petra Jeřábková	31.12.2012	-

Zoznam doktorandov

	Meno s titulmi	Škola/fakulta	Študijný odbor
Interní doktorandi hrazení z prostředků SAV			
1.	Mgr. Valéria Bizovská	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
2.	Mgr. Peter Boháč	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
3.	Mgr. Anna Brtáňová	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
4.	Mgr. Roman Bystrický	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
5.	Mgr. Magdaléna Domanická	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
6.	Ing. Ondrej Hanzel	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
7.	Mgr. Marcela Hrdá	Prírodovedecká fakulta UK	4.1.11 chemická fyzika
8.	Mgr. Martin Kontrík	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
9.	Ing. Martin Michálek	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
10.	Ing. Samuel Sas	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
11.	Ing. Ľudmila Sekeráková	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
12.	Ing. Michal Šimurda	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
13.	Mgr. Michal Vetrecin	Prírodovedecká fakulta UK	4.1.15 anorganická chémia
Interní doktorandi hrazení z iných zdrojov			
1.	Ing. Christina Atzenhofer	Montanuniversitaet Leoben, Rakúsko	
2.	Ing. Peter Barborík	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
3.	Ing. Evelyn Andrea Bolaños Castro	Vysoká škola báňská - TU Ostrava, Česká republika	
4.	Ing. Monika Hrabalová	Vysoká škola báňská - TU Ostrava, Česká republika	
5.	Mgr. Anežka Křístková	Prírodovedecká fakulta UK	4.1.11 chemická fyzika
6.	Ing. Vladana Šamajová	Vysoká škola báňská - TU Ostrava, Česká republika	
Externí doktorandi			
organizácia nemá externých doktorandov			

-

Príloha B - Projekty riešené v organizácii

Medzinárodné projekty

Programy: Medziakademická dohoda (MAD)

1.) Uhlíkovými vláknami a nanotrúbkami spevnené a zhúževnatené keramické materiály určené pre aplikácie pri extrémne vysokých teplotách (*High strength and toughness ultra high temperature ceramics reinforced by fibers and carbon nanotubes*)

Zodpovedný riešiteľ:	Zoltán Lenčేశ
Trvanie projektu:	1.1.2010 / 31.12.2012
Evidenčné číslo projektu:	MAD CNR-SAV-č. 12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Taliansko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Projekt bol zameraný na prípravu keramického kompozitu na báze ZrB_2 spevneného SiC vláknami a predĺženými časticami (whiskrami). Ciele projektu boli úspešne splnené v plnej miere. V rámci projektu sa podarilo pripraviť referenčné materiály ZrB_2 s 5% prídavkom nepovlakovaných SiC vlákien a whiskrov. Zvýšenie húževnatosti sme dosiahli z krehkej ZrB_2 matrice, na vláknach a whiskroch SiC bola pripravená inertná BN vrstva z roztokov 0,3 M a 0,1 M H_3BO_3 karbotermickou redukciou a následnou nitridáciou. Povlakované vlákna a whiskre boli pridané k ZrB_2 matrici a zhutňované žiarovým lisovaním pri teplote 1850 °C v atmosfére argónu. Hustota keramických kompozitov po spekaní bola na úrovni 98%. Materiál bol podrobne charakterizovaný z hľadiska jeho mikroštruktúry a mechanických vlastností.

Výsledky sú zhrnuté v prácach:

1. BAČA Ľ. - LENČEŠ Z. - JOGL C. - NEUBAUER E. - VITKOVIČ M. - MERSTALLINGER A. - ŠAJGALÍK P. Microstructure evolution and tribological properties of $TiB_2/Ni-Ta$ cermets. In Journal of the European Ceramic Society, 2012, vol. 32, no. 9, p. 1941-1948.
2. ŠAJGALÍK P. - HNATKO M. - LENČEŠ Z. - FRAJKOROVÁ F. - BOLAÑOS CASTRO E.A. Electrically conductive SiC ceramics. In ISASC2012. International symposium on new frontier of advanced Si-based ceramics and composites, 25.-28.03.2012, Abstract book, The Korean Ceramic Society, Korea, 2012, p. 74.
3. KAVECKÝ Š. - HNATKO M. - JANEK M. - ŠTEFÁNIK P. Carbon nanotubes and short high modulus carbon fibres combination to composite preparation. In FRAKTOGRAFIA 2012, Book of Abstracts, Košice, Institute of Materials Research SAS, 2012.

2.) Pórovité anorganické materiály pripravené z vrstevnatých silikátov – syntéza, stabilita a funkčnosť (*Porous inorganic materials based on layered silicates – synthesis, stability, and functionality*)

Zodpovedný riešiteľ:	Jana Madejová
Trvanie projektu:	1.1.2010 / 31.12.2012
Evidenčné číslo projektu:	MAD 19/2010
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Poľsko: 1
Čerpané financie:	

Dosiahnuté výsledky:

Zimowska M. - Pálková H. - Madejová J., - Dula R. - Pamin K. - Olejniczak Z. - Gil B. - Serwicka E.M. Laponite-derived porous clay heterostructures: III. The effect of alumination, Microporous and Mesoporous Materials (zaslané)

3.) Keramické nanokompozity na báze oxidu a nitridu hafničitého so zlepšenou vysokoteplotnou oxidačnou a koróznou odolnosťou (*Hafnia- and Hafnium Nitride-Based Ceramic Nanocomposites with Improved High-Temperature Oxidation and Corrosion Resistance*)

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.1.2010 / 31.12.2012
Evidenčné číslo projektu:	PPP DAAD-SAV-2010-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	2 - Nemecko: 2
Čerpané financie:	

Dosiahnuté výsledky:

Projekt riešil vysoko aktuálnu problematiku z oblasti vysokoteplotnej oxidačnej odolnosti a koróznej odolnosti keramických materiálov na báze nitridu a karbidu kremičitého, ktoré boli pripravené z organokeramických prekursorov na báze SiOC/HfO₂ a SiCN/HfO₂. Ciele projektu boli v plnej miere splnené, bol úspešne zvládnutý proces prípravy hutných keramických materiálov pre vysokoteplotné aplikácie. Nové systémy boli úspešne charakterizované z hľadiska získanej mikroštruktúry, mechanických ako aj funkčných vlastností, chemického a fázového zloženia.

Výsledky sú zhrnuté v prácach:

GALUSKOVÁ D. - KAŠIAROVÁ M. - HNATKO M. - GALUSEK D. - ŠAJGALÍK P. - DUSZA J. Influence of corrosion on the surface characteristics and mechanical properties of structural ceramics. In PASNPG - Potential and applications of surface nanotreatment of polymers and glass, 15.-17.10.2012, Book of Extended Abstracts, Masarykova univerzita, Brno, ČR, 2012, p. 9-10.

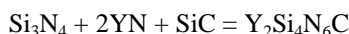
4.) Príprava a charakterizácia nanokompozitných keramických materiálov na báze Al₂O₃ a Si₃N₄ pre rezanie ťažko obrábatelných materiálov (*Preparation and characterization of alumina and silicon nitride-based nanocomposites for cutting of hard-to-machine materials*)

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.1.2010 / 31.12.2012
Evidenčné číslo projektu:	SAS-NSC-2010-02
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Taiwan: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 40000 €

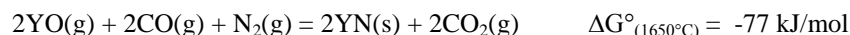
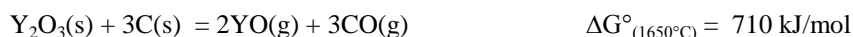
Dosiahnuté výsledky:

Projekt bol zameraný na vývoj keramických rezných nástrojov na báze kompozitných Si₃N₄-SiC materiálov, vhodných na sústruženie tvrdých, ťažko obrábatelných kovových zliatin. Konečným cieľom bolo pripraviť kompozitný materiál technológiou GPS (gass pressure sintering), ktorá je z hľadiska komerčného využitia ďaleko výhodnejšia v porovnaní s horúcim lisovaním. Pre splnenie tejto úlohy bolo nevyhnutné pochopiť mechanizmus tvorby SiC fázy cestou karbotermickej redukcie SiO₂ *in situ* v procese spekania. Výsledkom modelových experimentov v systémoch Re₂O₃-SiO₂-C bolo zistenie, že aktivita uhlíka v grafitovej peci / v grafitovom kelímku je vysoká, blízka jednej a spôsobuje redukciu SiO₂ v systéme Y₂O₃-SiO₂. Redukcia Y₂O₃ nebola v týchto systémoch pozorovaná. Pochopenie mechanizmu tvorby SiC fázy cestou karbotermickej redukcie SiO₂ *in situ* v procese spekania nám umožnilo pripraviť horúcim lisovaním hutné Si₃N₄/SiC mikro/nano kompozity s rôznym zložením fázy na hraniciach zŕn (Lu₂O₃, Yb₂O₃, Y₂O₃, Sm₂O₃, Nd₂O₃, La₂O₃). Za originálny výsledok možno považovať zistenie, že mechanické vlastnosti (tvrdosť, lomová húževnatosť, pevnosť) sa zvyšujú so znižovaním iónového polomeru Re³⁺ katiónu použitej prísady spekania. Kompozitný materiál s Lu₂O₃ na hraniciach zŕn má pri izbovej teplote najvyššiu tvrdosť, lomovú húževnatosť a pevnosť. Ten istý materiál sa vyznačoval aj najlepšou odolnosťou voči tečeniu, ktorá bola stanovená v teplotnom intervale 1250 – 1400 °C s mechanickým zaťažením v intervale od 50 do 150 MPa. Výsledky rezných testov potvrdili predpoklad o výnimočných rezných vlastnostiach, ktorý bol vyslovený na základe nameraných mechanických vlastností pripravených kompozitov. Z výsledku vyplýva, že v porovnaní s komerčne dostupnými keramickými nástrojmi (SN300®, KY3500®) má nami pripravený kompozit trikrát vyššiu životnosť.

V druhej etape projektu bola snaha pripraviť rovnako kvalitný materiál technikou GPS (gass pressure sintering), ktorá je z hľadiska komerčného využitia výhodnejšia v porovnaní s horúcim lisovaním. Tento cieľ sa nepodarilo splniť v plnej miere, pretože predstavy o tvorbe SiC fázy *in situ* v procese spekania pri teplote 1500°C a následné zhutnenie celého systému pri teplotách do 1900 °C sa podľa našich výsledkov navzájom vylučujú pri použití spomenutej technológie GPS. Výsledky experimentov v sústavách Si₃N₄-Y₂O₃-SiO₂-C a Si₃N₄-Y₂O₃-SiO₂-SiC spekaných pri teplotách do 1900°C pri rôznych parciálnych tlakoch N_{2(g)} a CO_(g) naznačujú, že hlavnou príčinou nízkych hutností pripravených materiálov je vznik novej vysokoteplotnej fázy so zložením Y₂Si₄N₆C, ktorej prítomnosť znemožňuje proces zhutňovania. Jej vznik je možné popísať reakciou:

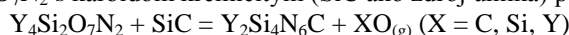


Vznik tejto fázy sme pozorovali vo vzorkách spekaných pri teplotách nad 1650 °C. K tvorbe tejto fázy je nevyhnutná prítomnosť nitridu yttritého (YN), nakoľko $\text{Y}_2\text{Si}_4\text{N}_6\text{C}$ fáza neobsahuje kyslík. YN vzniká v dôsledku karbotermickej redukcie a následnej nitridácie oxidu yttritého (Y_2O_3). Redukcia Y_2O_3 nebola doposiaľ v týchto systémoch pozorovaná (vysoká stabilita Y_2O_3) a jej priebeh vylučujú aj termodynamické výpočty:

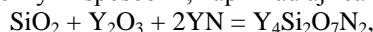


Napriek tomu nemožno úplne vylúčiť, že k redukcii a následnej nitridácii oxidu yttritého pri daných podmienkach dochádza. Tento dej už bol v minulosti pozorovaný dokonca pri teplote 1500 °C, ale pri podstatne odlišných podmienkach (desaťnásobný prebytok uhlíka, prietočná atmosféra dusíka - podpora reakcie odoberaním $\text{CO}(\text{g})$ ako produktu reakcie).

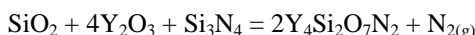
Druhým možným vysvetlením vzniku nežiaducej fázy $\text{Y}_2\text{Si}_4\text{N}_6\text{C}$ vo vzorkách spekaných nad teplotou 1650 °C je reakcia oxinitridovej fázy $\text{Y}_4\text{Si}_2\text{O}_7\text{N}_2$ s karbidom kremičitým (SiC ako zdroj uhlíka) podľa reakcie:



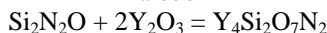
Prítomnosť $\text{Y}_4\text{Si}_2\text{O}_7\text{N}_2$ a SiC bola potvrdená rtg analýzou len vo vzorkách spekaných v teplotnom intervale od 1500°C do 1650°C, avšak vo vzorkách spekaných nad teplotou 1650°C už tieto fázy detegované neboli. Vznik oxinitridovej fázy $\text{Y}_4\text{Si}_2\text{O}_7\text{N}_2$ sa očakával, pretože pri spekaní Si_3N_4 - Y_2O_3 - SiO_2 systémov sa táto fáza bežne vyskytuje na hraniciach Si_3N_4 zfn. Jej tvorbu je možné opísať niekoľkými spôsobmi, napríklad aj reakciou:



kde sa predpokladá prítomnosť YN (nepravdepodobná redukcia a následná nitridácia Y_2O_3 pri daných podmienkach). Pravdepodobnejší spôsob vzniku $\text{Y}_4\text{Si}_2\text{O}_7\text{N}_2$ fázy sú reakcie:



alebo



Vyslovený predpoklad vzniku fázy $\text{Y}_2\text{Si}_4\text{N}_6\text{C}$ reakciou $\text{Y}_4\text{Si}_2\text{O}_7\text{N}_2$ s SiC potvrdzuje aj zistenie, že fázové zloženie pripravených vzoriek z východiskovej zmesi Si_3N_4 - Y_2O_3 - SiO_2 -C (príprava SiC in situ, karbotermickou redukciiou SiO_2), bolo rovnaké s fázovým zložením vzoriek pripravených zo zmesi s priamym prídavkom SiC (Si_3N_4 - Y_2O_3 - SiO_2 -SiC). V druhom z týchto systémov (priamy prídavok SiC vo východiskovej zmesi) žiadny voľný uhlík nebol, čo do veľkej miery vylučuje možnosť karbotermickej redukcie Y_2O_3 a vznik YN a teda aj vznik fázy $\text{Y}_2\text{Si}_4\text{N}_6\text{C}$ podľa reakcie $\text{Si}_3\text{N}_4 + 2\text{YN} + \text{SiC} = \text{Y}_2\text{Si}_4\text{N}_6\text{C}$.

Z množstva modelových experimentov v systémoch Si_3N_4 - Y_2O_3 - SiO_2 -C a Si_3N_4 - Y_2O_3 - SiO_2 -SiC (ako aj z podrobnej termodynamickej analýzy), ktoré boli robené v teplotnom intervale od 1500 °C do 1900 °C vo vákuu, prípadne v atmosfére dusíka a oxidu uhoľnatého, boli získané dôležité výsledky. Tento súbor výsledkov opisuje mechanizmus tvorby SiC nanoinklúzií v procese spekania Si_3N_4 pri teplote 1500 °C, ako aj procesy, ktoré prebiehajú pri vyšších teplotách a vedú k vzniku nových vysokoteplotných fáz. Tieto výsledky otvárajú množstvo nezodpovedaných otázok a z hľadiska základného výskumu ich považujeme za veľmi hodnotné a plne využiteľné v oblasti ďalšieho vývoja keramických kompozitov na báze Si_3N_4 /SiC. Pridanou hodnotou celého projektu bolo prehĺbenie spolupráce a vzájomných vzťahov s riešiteľmi z National Cheng Kung University na čele s prof. Huang Jow-Lay.

Výsledky sú zhrnuté v prácach:

1. ŠAJGALÍK P. - CHLUP Z. - GALL M. - HNATKO M. - LENČEŠ Z. - LOJANOVÁ Š. GB chemistry of SiC/Si₃N₄ nano/micro-composites - implications to fracture behavior - experimental and theoretical study. In CMCEE - 10th international symposium on ceramic materials and components for energy and environmental applications, Program and Abstracts, Dresden, Fraunhofer IKTS, 2012, p. 47.
2. KAŠIAROVÁ M. - BURÍK P. - TATARKO P. - ŠAJGALÍK P. - DUSZA J. Thermal shock resistance of Si₃N₄-SiC sintered with different rare-earth oxide additives. In Progress in advanced ceramic materials, Workshop Book of Abstracts, 27.-28.11.2012, Institute of Materials Research SAS, Košice, 2012, p. 22.
3. BYSTRICKÝ R. - HNATKO M. - LENČEŠ Z. - ŠAJGALÍK P. Príprava nanokompozitných keramických materiálov na báze Si₃N₄ pre rezanie ťažko obrábateľných materiálov. In Pokroky v anorganickej chémii, 18.-21. 06. 2012, Zborník príspevkov z IX. Seminára, Univerzita Komenského v Bratislave, 2012, s. 49-51.
4. BYSTRICKÝ R. - HNATKO M. - ŠAJGALÍK P. Preparation of nanocomposite ceramic materials based on Si₃N₄ for cutting hard machinable materials. In Progress in advanced ceramic materials, Workshop Book of Abstracts,

28.11.2012, Košice, Institute of Materials Research SAS, p. 9.

Programy: Medzivládna dohoda

5.) Termodynamické modely a štruktúra viacložkových skiel (*Thermodynamic models and structure of multi-component glasses*)

Zodpovedný riešiteľ:	Mária Chromčíková
Trvanie projektu:	1.1.2012 / 31.12.2013
Evidenčné číslo projektu:	SK-CZ-0007-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Česko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 1307 €

Dosiahnuté výsledky:

Na pracovisku VILA v Trenčíne sa realizovalo meranie imedančných spektier vzoriek fosforečnano-boritanových skiel syntetizovaných na Univerzite Pardubice. Prínosom spolupráce bola spoločná realizácia vedeckovýskumných aktivít, ktoré vyústili do spoločnej prezentácie výsledkov na medzinárodných konferenciách a v príprave spoločných publikácií pre prevažne zahraničné karentované časopisy.

Výsledky sú zhrnuté v prácach:

1. LIŠKA M. - CHROMČÍKOVÁ M. - HOLUBOVÁ J. - FATURÍKOVÁ K. Glass structure study by Raman spectroscopy combined with thermodynamic modeling. In ESAS 2012 - XXth SCSC. European symposium on atomic spectrometry 2012 and XXth Slovak-Czech Spectroscopic Conference, 7.-12.10. 2012, Book of Abstracts, Comenius University, Bratislava, 2012, p. 36.
2. CHROMČÍKOVÁ M. - LIŠKA M. - VLČKOVÁ P. - GAŠPÁREKOVÁ E. Thermodynamic model and principal component analysis of Raman spectra of 15(Na₂O, K₂O).10(CaO, ZnO).75(ZrO₂, SiO₂) glasses. In ESAS 2012 - XXth SCSC, European Symposium on Atomic Spectrometry 2012 and XXth Slovak-Czech Spectroscopic Conference, 7.-12.10., 2012, Book of Abstracts, Comenius University, Bratislava, 2012, p. 145.
3. HOLUBOVÁ J. - ČERNOŠKOVÁ E. - ČERNOŠEK Z. - CHROMČÍKOVÁ M. Sklá systému Ge-S-Te, Mezinárodní slovenský a český kalorimetrický seminář, Harrachov v Krkonoších, 155-18, 2012.
4. CHOVANEC J. - CHROMČÍKOVÁ M. - PILNÝ P. - SHÁVĚLOVÁ J. - MÁLEK J. - LIŠKA M. As₂Se₃ melt crystallization studied by quadratic approximation of nucleation and growth rate temperature dependence, Journal of Thermal Analysis and Calorimetry (zaslané)
5. CHROMČÍKOVÁ M. - LIŠKA M. - LISSOVÁ M. - MOŠNER P. - KOUDELKA L. Structural relaxation of PbO-WO₃-P₂O₅ glasses, Journal of Thermal Analysis and Calorimetry (zaslané).

6.) Kvantovo-chemické výpočty magnetických vlastností rôznych chemických zlúčenín so zahrnutím relativistických efektov (*Quantum-chemical calculations of magnetic properties of various chemical compounds with inclusion of relativistic effects*)

Zodpovedný riešiteľ:	Vladimír Malkin
Trvanie projektu:	1.1.2012 / 31.12.2013
Evidenčné číslo projektu:	SK-FR-0018-11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	1 - Francúzsko: 1
Čerpané financie:	Podpora medzinárodnej spolupráce z národných zdrojov: 2236 €

Dosiahnuté výsledky:

Pracovali sme na vývoji metódy určenej pre výpočty magnetizovateľností molekúl so zahrnutím relativistických efektov bez závislosti na tzv. kalibračnom počiatku (tzv. gauge-origin) [1].

ILIAS M. - JENSEN H.-J.A. - SAUE T. - BAST R. Gauge origin independent calculations of molecular magnetizabilities in relativistic four-component theory, 2013, pripravovaný manuscript.

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

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.1.2011 / 31.12.2014
Evidenčné číslo projektu:	264873
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Technische Universität Darmstadt
Počet spoluriešiteľských inštitúcií:	9 - Nemecko: 3, Francúzsko: 2, Taliansko: 2, Švédsko: 1, Turecko: 1
Čerpané financie:	EU: 73207 €

Dosiahnuté výsledky:

V druhej etape projektu 7. RP EU, ktorého MVTS podporný projekt je súčasťou, bola úspešne zvládnutá technológia prípravy materiálov na báze ternárnych nitridov dopovaných európiom. Bol charakterizovaný a opísaný efekt oxidačného stupňa dopujúceho prvku na luminiscenčné vlastnosti pripravených materiálov. Na základe nameraných výsledkov získaných meraním emisných spektier sa podarilo charakterizovať oblasti emitujúceho žiarenia po excitácii rôznymi zdrojmi žiarenia ako aj ich kvantových výťažkov. Výrazný posun sa spravil v oblasti výpočtov elektrónových štruktúr pomocou DFT GGA metódy.

Výsledky sú zhrnuté v prácach:

1. LENČEŠ Z. - HRABALOVÁ M. - CZÍMEROVÁ A. - ŠAJGALÍK P. - ZHOU Y. - HIRAO K. Luminescent properties of europium-doped lanthanum silicon nitride phosphor. In Journal of the Korean Ceramic Society, 2012, vol. 49, no. 4, p. 325-327.
2. LENČEŠ Z. - BENCO Ľ. - HIRAO K. - ŠAJGALÍK P. Ternary silicon nitrides - from engineering ceramics to phosphors. In CMCEE - 10th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications, Program and Abstracts, Dresden, Fraunhofer IKTS, 2012, p. 109.
3. LENČEŠ Z. - BENCO Ľ. - HRABALOVÁ M. - CZÍMEROVÁ A. - ŠAJGALÍK P. - HIRAO K. Europium and cerium-doped ternary silicon nitrides phosphors. In ISNT2012 - 7th international symposium on nitrides, 3.-6.6. 2012, Programme, Institute des Sciences Chimiques de Rennes, France, p. 46.
4. HRABALOVÁ M. - LENČEŠ Z. - CZÍMEROVÁ A. - ŠAJGALÍK P. Europium and cerium-doped ternary silicon nitride-based phosphors. In Progress in advanced ceramic materials, Workshop Book of Abstracts, 27.-28.11.2012, Institute of Materials Research SAS, Košice, p. 19.

Programy: Bilaterálne - iné**8.) Alternatívne materiály a zariadenia pre komponenty do púmp** (*Alternative Werkstoffe für Pumpenkomponenten*)

Zodpovedný riešiteľ:	Milan Drábik
Trvanie projektu:	1.2.2011 / 31.12.2013
Evidenčné číslo projektu:	áno
Organizácia je koordinátorom projektu:	Ústav anorganickej chémie SAV
Koordinátor:	3 - Rakúsko: 3
Počet spoluriešiteľských inštitúcií:	Iné zdroje: 8886 €
Čerpané financie:	

Dosiahnuté výsledky:

Ukázali sme, že mechanochemická aktivácia vedie k sieťovaniu už v surovinových zmesiach MDF materiálov, podmienky boli optimalizované a za takýchto podmienok bol získaný prekursor, ktorého vlastnosti sú testované v spoluriešiteľských inštitúciách. Časť výsledkov bola prezentovaná/publikovaná:

DRÁBIK M. - BILLIK P. - GÁLIKOVÁ Ľ. The impact of mechanochemical activation of raw mixtures on the effectivity of formation procedure of macro-defect-free materials. In 10th International Conference Solid State Chemistry, 10.-14. 06. 2012, Zborník z medzinárodnej konferencie, University of Pardubice, Faculty of Chemical Technology, ČR, p. 62.

9.) Atomárne aspekty pokročilých materiálov na báze cementu (*Atomic level aspects of advanced cementitious materials*)

Zodpovedný riešiteľ: Milan Drábik
Trvanie projektu: 1.1.2008 / 31.12.2012
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 - Veľká Británia: 1
Čerpané financie:

Dosiahnuté výsledky:

Dlhoročná spolupráca predstavuje metodologický prínos pre oblasť špecifických materiálov na báze cementu, jej výsledkom sú početné publikácie (od r. 1994 doposiaľ), aktuálne je v tejto spolupráci zvýšený dôraz na formu vedecko-pedagogickú (program Erasmus).

10.) Molekulové simulácie vybraných organoíllov - charakterizácia štruktúry a vlastností (*Molecular simulations of selected organoclays - characterization of structure and properties*)

Zodpovedný riešiteľ: Eva Scholtzová
Trvanie projektu: 1.1.2011 / 31.12.2012
Evidenčné číslo projektu: SK-AT-0020-10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: Podpora medzinárodnej spolupráce z národných zdrojov: 2160 €

Dosiahnuté výsledky:

Ciele tohto projektu boli v plnej miere splnené. Na charakterizáciu interakcií v medzivrstvovom priestore organoíllov bola úspešne použitá výpočtová metóda založená na teórii elektrónovej hustoty (DFT – Density functional theory). Bol opísaný typ vodíkových väzieb, ktorými sa viažu interkalované molekuly alebo katióny na ílový minerál ako aj detailne analyzované vibračné spektrá vybraných interkalátov. Výsledky dosiahnuté teoretickými výpočtami pomohli analyzovať problematické oblasti experimentálne nameraných spektier, kde dochádza k prekryvu viacerých vibračných módo, ako aj zistiť, ako sú jednotlivé organické molekuly a katióny ukotvené na skelet ílu a boli prezentované na medzinárodných konferenciách a publikované v odborných časopisoch.

Výsledky sú zhrnuté v prácach:

MATUSIK J. - SCHOLTZOVÁ E. - TUNEGA D. Influence of synthesis conditions on the formation of a kaolinite-methanol complex and simulation of its vibrational spectra. In Clays and Clay Minerals, 2012, vol. 60, p. 227-239.

11.) Keramické nanokompozity pre aplikácie v extrémnych prostrediach (*Ceramic nanocomposites for applications in extreme environments*)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1.1.2012 / 31.12.2013
Evidenčné číslo projektu: DAAD/SAV 54440408
Organizácia je koordinátorom projektu: nie
Koordinátor: Materialwissenschaft Technische Universität Darmstadt
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie:

Dosiahnuté výsledky:

Spolupráca s Technische Universität Darmstadt je zameraná na výskum a vývoj hutných keramických materiálov pripravených z organokeramických prekursorov na báze HfN/Si(B)CN a HfB₂/Si(B)CN. V prvom roku riešenia bola úspešne zvládnutá optimalizácia teplotného režimu spekania horúcim lisovaním a podrobná charakterizácia týchto materiálov z hľadiska mikroštruktúry a mechanických vlastností. V druhej etape projektu bude na pripravených

materiáloch študovaná ich korózna odolnosť v agresívnych hydrotermálnych podmienkach v teplotnom intervale od 150°C do 250°C s rôznym časom korózie.

Výsledky sú zhrnuté v prácach:

1. LINCK C. - IONESCU E. - PAPENDORF B. - GALUSKOVÁ D. - GALUSEK D. - ŠAJGALÍK P. - RIEDEL R. Corrosion behavior of silicon oxycarbide-based ceramic nanocomposites under hydrothermal conditions. In International Journal of Materials Research, 2012, vol. 103, p. 31-39.
2. GALUSKOVÁ D. - HNATKO M. - GALUSEK D. - ŠAJGALÍK P. Hydrothermal corrosion of alumina ceramics under static and quasi-dynamic conditions. In Key Engineering Materials, 2012, vols. 512-515, p. 513-518.
3. GALUSKOVÁ D. - HNATKO M. - KRAXNER J. - GALUSEK D. - ŠAJGALÍK P. Influence of calcium addition on the chemical durability of the model alumino-silicate glasses in aqueous solutions. In Key Engineering Materials, 2012, vols. 512-515, p. 1009-1014.

Projekty národných agentúr

Programy: VEGA

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

Zodpovedný riešiteľ:	Miroslav Boča
Trvanie projektu:	1.1.2012 / 31.12.2015
Evidenčné číslo projektu:	2/0095/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 17529 €

Dosiahnuté výsledky:

1. BOČA M. - BARBORÍK P. - MIČUŠÍK M. - OMASTOVÁ M. X-ray photoelectron spectroscopy as detection tool for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF, K₂TaF₇, K₃TaF₈, K₂ZrF₆, Na₇Zr₆F₃₁ and K₃ZrF₇. In Solid State Sciences, 2012, vol. 14, p. 828 - 832.
2. PAVLÍK V. - BOČA M. Corrosion of titanium diboride in molten FLiNaK(eut). In Chemical papers, 2012, vol. 66, p. 1073-1077.
3. KUBÍKOVÁ B. - PAVLÍK V. - MACKOVÁ I. - BOČA M. Surface tension and viscosity of the molten (LiF-NaF-KF)eut-K₂ZrF₆ system. In Monatshefte für Chemie, 2012, vol. 143, p. 1459-1462.
4. ŠIMKO F. - PRITULA O. - RAKHMATULLIN A. - BESSADA C. The study of the system Na₃AlF₆-FeF₃. In Journal of Fluorine Chemistry, 2012, vol. 144, p. 137-142.

- 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: 10517 €

Dosiahnuté výsledky:

Projekt sa dostal do posledného roku riešenia. Úsilie pripraviť fluorescenčne aktívne materiály vyvrcholilo do úspešnej prípravy dvoch nových typov hybridných materiálov, ktoré vykazovali zaujímavé fluorescenčné vlastnosti. Jedným typom boli hybridy s kovalentne viazanými reaktívnymi fluorescenčnými farbivami na hranách vrstiev smektitov. Druhým typom sú viackomponentné hybridné koloidy a gély na báze organoólu a xylénu. Popri týchto materiáloch sme pokračovali vo vývoji metodík príprav hybridných materiálov ako aj ich charakterizácie.

3.) Chémia ako „pridaná hodnota“ v poznávaní a vývoji i) pórobetónov novej generácie a ii) materiálov bez makrodefektov (MDF materiálov) (*The added value of chemistry for the knowledge and development of i) novel autoclaved aerated concrete and ii) macrodefectfree (MDF) materials*)

Zodpovedný riešiteľ:	Milan Drábik
Trvanie projektu:	1.1.2011 / 31.12.2013
Evidenčné číslo projektu:	2/0020/11
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 2086 €

Dosiahnuté výsledky:

Získali sa výsledky o pozitívnom vplyve mechanochemickej aktivácie surovínových zmesí na rozsah sieťovania už v upravených surovinách MDF materiálov.

Prezentované/publikované:

1. DRÁBIK M. - GÁLIKOVÁ Ľ. - BILLIK P. - KULIFFAYOVÁ M. Chémia v rozvoji poznania MDF materiálov. In Chemické listy, 2012, roč. 106, č. 6, s. 540.
2. DRÁBIK M. - BILLIK P. - GÁLIKOVÁ Ľ. The impact of mechanochemical activation of raw mixtures on the effectivity of formation procedure of macro-defect-free materials. In 10th International Conference Solid State Chemistry, 10.-14. 06. 2012, Zborník z medzinárodnej konferencie, University of Pardubice, Faculty of Chemical Technology, ČR, p. 62.

Poznanky o špeciálnych pórobetónoch sú zhrnuté v publikácii:

3. DRÁBIK M. - BALKOVIC S. - PETEJA M. Dolgosročnoje issledovanie avtoklavnogo legkogo betona, izgotovlennogo c ispol'zovaniem zoly kipjaščego sloja. In Cement i ego primenenie, 2012, no. 4, p. 114-118.

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

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

Dosiahnuté výsledky:

Kryštalizácie kremičitanových skiel boli skúmané termickými metódami DTA a DSC. Termodynamické modely sa budú konfrontovať s výsledkami experimentov a molekulovodynamických simulácií. Experimentálne sa stanovujú závislosti najdôležitejších vlastností (hustota, viskozita, teplotná rozťažnosť, index lomu, povrchové napätie, impedančné spektrá) vybraných skiel od zloženia a teploty.

1. HOLUBOVÁ J. - LIŠKA M. - CHROMČÍKOVÁ M. - ČERNOŠKOVÁ E. - ČERNOŠEK Z. Structure of As₂S₃-Sb₂S₃ glasses by combined Raman spectroscopy and a thermodynamic modelling approach. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B, 2012, vol. 53, no. 2, p. 31-36.
2. LIŠKA M. - HOLUBOVÁ J. - ČERNOŠKOVÁ E. - ČERNOŠEK Z. - CHROMČÍKOVÁ M. - PLŠKO A. Nucleation and crystallization of an As₂Se₃ undercooled melt. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B, 2012, vol. 53, p. 289-293.
3. CHROMČÍKOVÁ M. - LISSOVÁ M. - MOŠNER P. - ROSSLEROVÁ I. - LIŠKA M. - KOUDELKA L. Viscosity and viscous flow activation energy of PbO-WO₃-P₂O₅ glasses. In Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B – akceptovaný.
4. CHOVANEC J. - CHROMČÍKOVÁ M. - PILNÝ P. - SHÁVĚLOVÁ J. - MÁLEK J. – LIŠKA M. As₂Se₃ melt crystallization studied by quadratic approximation of nucleation and growth rate temperature dependence. Journal of Thermal Analysis and Calorimetry – zaslané
5. CHROMČÍKOVÁ M. - LIŠKA M. - LISSOVÁ M. - MOŠNER P. - KOUDELKA L. Structural relaxation of PbO-WO₃-P₂O₅ glasses. Journal of Thermal Analysis and Calorimetry – zaslané.

5.) Luminiscenčné vlastnosti ternárnych nitridov a oxynitridov kremíka dopovaných lantanoidmi (*Luminescence of lanthanoid-doped silicon-based ternary nitrides and oxynitrides*)

Zodpovedný riešiteľ:	Zoltán Lenčేశ
Trvanie projektu:	1.1.2010 / 31.12.2013
Evidenčné číslo projektu:	2/0178/10
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 12116 €

Dosiahnuté výsledky:

Projekt sa zaoberá vývojom vysokoúčinných luminofórov na báze nitridov a oxynitridov kremíka. V rámci uplynulých etáp projektu bola úspešne zvládnutá príprava luminofórov na báze MgSiN_2 a LaSi_3N_5 , ktoré boli dopované európiom v koncentračnom rozsahu 1-6 mol.%, ako aj optimalizácia reakčných podmienok ich syntézy. Boli vykonané série teoretických výpočtov elektrónovej štruktúry a šírky zakázaného pásma ternárnych nitridov pomocou programového balíku VASP (Vienna ab initio simulation package). Podarilo sa získať súbor luminiscenčných vlastností nitridov a oxynitridov spektroskopickými metódami (fluorescenčná spektrometria, UV spektrometria).

Výsledky sú zhrnuté v prácach:

1. PICHLBAUER S. - HARMUTH H. - LENČEŠ Z. - ŠAJGALÍK P. Preliminary investigations of the production of MgAlON bonded refractories. In Journal of the European Ceramic Society, 2012, vol. 32, p. 2013-2018.
2. LENČEŠ Z. - BENCO Ľ. - HRABALOVÁ M. - CZÍMEROVÁ A. - ŠAJGALÍK P. - HIRAO K. Europium and cerium-doped ternary silicon nitrides phosphors. In ISNT 2012 - 7th international symposium on nitrides, 3.-6.6.2012, Programme, Institut des Sciences Chimiques de Rennes, France, p. 46.
3. LENČEŠ Z. - BENCO Ľ. - CZÍMEROVÁ A. - ŠAJGALÍK P. - VELIČ D. - ZHOU Y. - HIRAO K. Ternary silicon nitrides phosphors. In ISASC2012 - International symposium on new frontier of advanced Si-based ceramics and composites, 25.-28.3.2012, Abstract Book, The Korean Ceramic Society, 2012, p. 88.

6.) 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 koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 12714 €

Dosiahnuté výsledky:

V poslednom roku riešenia projektu sa dokončili experimenty a spracovali získané výsledky. Na sledovanie hydratácie kyselinovo-aktivovaných MMT-ov z lokality Kopernica sa využila nová metóda založená na meraní NIR spektier vzoriek v uzavretých fľaštičkách. Najvyššiu hydratačnú kapacitu mala vzorka rozpúšťaná 5 hod, adsorpčná schopnosť dlhšie rozpúšťaných vzoriek s nižším obsahom MMT-u postupne klesala. Zistilo sa, že prítomnosť organického kationu zvyšuje stabilitu MMT-u v HCl. So zväčšujúcou sa dĺžkou alkylového reťazca rýchlosť rozkladu MMT-u klesá. Študoval sa aj vplyv rôznych parametrov na stabilitu ílových hornín, predovšetkým bentonitov, ktoré sa využívajú ako tesniaci materiál v hlbinných úložiskách rádioaktívneho odpadu.

1. PENTRÁK M., - BIZOVSKÁ V. - MADEJOVÁ J. Near-IR study of water adsorption on acid-treated montmorillonite. In Vibrational Spectroscopy, 2012, vol. 63, p. 360-366.
2. MADEJOVÁ J. - PÁLKOVÁ H. - JANKOVIČ Ľ. Degradation of surfactant-modified montmorillonites in HCl. In Materials Chemistry and Physics, 2012, vol. 134, p. 768-776.
3. PENTRÁK M. - CZÍMEROVÁ A. - MADEJOVÁ J. - KOMADEL P. Changes in layer charge of clay minerals upon acid treatment as obtained from their interactions with methylene blue. In Applied Clay Science, 2012, vol. 55, p. 100-107.
4. HONTY M. - WANG L. - OSACKÝ M. - UHLÍK P. - CZÍMEROVÁ A. - MADEJOVÁ J.: Experimental interactions of the Opalinus Clay and Boom Clay with various repository relevant solutions at 90°C. In Applied Clay Science, 2012, vol. 59, p. 50-63.
5. OSACKÝ M. - ŠUCHA V. - MIGLIERINI M. - MADEJOVÁ J. Reaction of bentonites with pyrite concentrate after wetting and drying cycles at 80°C: relevance to radioactive waste (Radwaste) storage. In Clay Minerals, 2012, vol. 47, p. 465-479.

6. BRTÁŇOVÁ A., - MELICHOVÁ Z., - KOMADEL P. Sorption of Cu^{2+} from aqueous solutions by Slovak bentonites. In *Ceramics-Silikáty*, 2012, vol. 56, p. 55-60.
7. PÁLKOVÁ H. - HRONSKÝ V. - JANKOVIČ Ľ. - MADEJOVÁ J. The effect of acid treatment on the structure and surface acidity of tetraalkylammonium-montmorillonites, *Journal of Colloid and Interface Science* (prijaté do tlače)

7.) 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 koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 - Slovensko: 1
Čerpané financie: SAV: 15762 €

Dosiahnuté výsledky:

1. TEN-NO S. - NOGA J. Explicitly correlated electronic structure theory from R12/F12 ansätze. In *Wiley Interdisciplinary Reviews-Computational Molecular Science*, 2012, vol. 2, no. 1, p. 114-125.
2. ČÁRSKY P. - ČURÍK R. - VARGA Š. Efficient evaluation of Coulomb integrals in a mixed Gaussian and plane-wave basis using the density fitting and Cholesky decomposition. In *Journal of Chemical Physics*, 2012, vol. 136, no. 11, p. 114105-1-114105-8.

8.) Sklenné a keramické materiály s priestorovo usporiadanou štruktúrou (*Glasses and ceramics with 3D ordered structure.*)

Zodpovedný riešiteľ: Jaroslav Sedláček
Trvanie projektu: 1.1.2010 / 31.12.2012
Evidenčné číslo projektu: 2/0076/10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 - Slovensko: 2
Čerpané financie: SAV: 5122 €

Dosiahnuté výsledky:

V záverečnej fáze projektu boli na základe optimalizovaného postupu, tzv. Stöberovou metódou, pripravené monodisperzné SiO_2 guľôčky s rôznym priemerom (100 – 300 μm) a následne z nich boli pripravené syntetické opály. Pomocou modifikovaného postupu sedimentácie týchto stavebných guľôčok za asistencie zdroja vibrácií bolo možné pripraviť trojrozmerné vzorky opálu s dokonalým usporiadaním guľôčok a s rozmermi cca 5x4x4 mm. Na týchto vzorkách bola skúmaná možnosť využitia týchto syntetických opálov pri príprave inverzných opálových štruktúr pomocou infiltrácie vhodných prekursorom. Takýmto spôsobom boli pripravené inverzné opály na báze SiC a YAG. Na pripravených materiáloch boli merané optické vlastnosti, ktorých výsledky sú vo fáze vyhodnocovania a následne budú využité pri príprave vedeckej publikácie.

9.) Štúdium vplyvu obsahu vody v slinkových mineráloch na ich štruktúrne, fyzikálno-chemické a mechanické vlastnosti - modelový a experimentálny prístup (*The influence of the water content in cementitious minerals on their structural, physical, chemical and mechanical properties – Model and experimental study*)

Zodpovedný riešiteľ: Eva Scholtzová
Trvanie projektu: 1.1.2012 / 31.12.2014
Evidenčné číslo projektu: 2/0083/12
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV: 3027 €

Dosiahnuté výsledky:

Cieľom tohto projektu je získať podrobnejšie informácie o hydratovaných fázach slinkových minerálov ako sú, ettringit,

thaumazit, tobermorit, portlandit pomocou výpočtových metód. Tieto štruktúry stále nie sú dostatočne preskúmané a zaujímavé sú hlavne ich mechanické vlastnosti, nakoľko slinkové minerály sú súčasťou materiálov používaných v stavebníctve. Samotné hydratované fázy sa vyskytujú v prírode iba zriedka. Napriek tomu sa podarilo tieto fázy získať. Doteraz bola analyzovaná štruktúra thaumazitu a namerané jeho IČ spektrum. Namerané spektrum bolo analyzované aj pomocou výpočtových metód. Testovali sa rôzne funkcionály na jednoduchších štruktúrach portlanditu a brucitu na výpočet mechanických vlastností, elastických konštánt a porovnali sa s experimentálnymi dostupnými dátami. Výsledky sú pripravované na publikovanie.

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

Zodpovedný riešiteľ:	Ľubomír Smrčok
Trvanie projektu:	1.1.2012 / 31.1.2015
Evidenčné číslo projektu:	2/0131/12
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 1928 €

Dosiahnuté výsledky:

OSZAJCA M. - SMRČOK Ľ. - PÁLKOVÁ H. - LASOCHA W. Synthesis and structure determination of tetrakis(4-iodoanilinium) β -octamolybdate dihydrate. In Journal of Molecular Structure, 2012, vol. 1021, p. 70-75.
SMRČOK Ľ. - KOLESNIKOV A.I. - RIEDER M. Combined inelastic neutron scattering and solid-state DFT study of dynamics of hydrogen atoms in trioctahedral 1M phlogopite. In Physics and Chemistry of Minerals, 2012, vol. 39, no. 9, p. 779-787.

11.) Výskum keramických kompozitných materiálov pripravených z polymérnych prekurzorov SiOC pre vysoko korozívne prostredie (*Research of ceramic composite materials prepared from polymer precursor SiOC for high corrosive environments*)

Zodpovedný riešiteľ:	Pavol Šajgalík
Trvanie projektu:	1.1.2010 / 31.12.2013
Evidenčné číslo projektu:	2/0036/10
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 14799 €

Dosiahnuté výsledky:

V rámci uplynulej etapy bola v súlade so stanovenými cieľmi zvládnutá optimalizácia zloženia kompozitov na báze Si_3N_4 s nekonvenčnými prísadami spekania na báze SiAlOC , SiHfOC , SiZrOC a SiLuOC . Podarilo sa optimalizovať teplotný režim ich prípravy a stanoviť ich fyzikálnochemické a mechanické vlastnosti. Úspešne sa podarilo zrealizovať štúdium ich koróznej odolnosti v taveninách kovov a v roztokoch halogenidov a solí. Momentálne sa intenzívne pracuje na stanovení kinetických parametrov korózie keramických kompozitov v jednotlivých korózných médiach ako aj na opise chemických dejov a reakcií počas korózie s cieľom pochopiť termickú, oxidačnú a koróznú stabilitu novo vyvinutých PDCs keramických materiálov ako najdôležitejšej funkcie pre ich potenciálne využitie v extrémnych podmienkach (vzduch, alkálie a iné korózne média).

Výsledky sú zhrnuté v prácach:

1. ŠAJGALÍK P. - LENČEŠ Z. - PLACHKÝ T. - RIEDEL R. - KLEEBE H.-J. Functionalization of nitride engineering ceramics by polymer derived sintering aids. In ISNT2012 - 7th international symposium on nitrides, 3.-6.6.2012, Programme, Institut des Sciences Chimiques de Rennes, France, p. 21.
2. FRAJKOROVÁ F. - HNATKO M. - LENČEŠ Z. - ŠAJGALÍK P. Electrically conductive silicon carbide with the addition of Ti-NbC. In Journal of the European Ceramic Society, 2012, vol. 32, p. 2513-2518.
3. FRAJKOROVÁ F. - LENČEŠ Z. - ŠAJGALÍK P. Electrically conductive silicon carbide without oxide sintering additives. In Journal of the Korean Ceramic Society, 2012, vol. 49, p. 342-346.

12.) Fluoridové elektrolyty s nízkou teplotou topenia s potenciálom pre elektrolytickú výrobu hliníka (*Low temperature melting fluoride systems with potential for electrolytic aluminium*)

production)

Zodpovedný riešiteľ: František Šimko
Trvanie projektu: 1.1.2010 / 31.12.2013
Evidenčné číslo projektu: 2/0179/10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: SAV: 7947 €

Dosiahnuté výsledky:

Získali sa základné údaje o fyzikálnochemických vlastnostiach (fázových rovnováhach a hustote) skúmaného systému $\text{KF-AlF}_3\text{-Al}_2\text{O}_3$, ale pri rôznych kryolitových pomeroch KF/AlF_3 . Tak isto sa nameria fázový diagram podsystemu $\text{KF-Al}_2\text{O}_3$. Určili sa teploty primárnych, eutektických a peritektických kryštalizácií, z ktorých sa zostrojil príslušný fázový diagram do koncentrácie 30 mol. % Al_2O_3 . Všetky skúmané systémy sa analyzovali pomocou dostupných analytických metód, najmä röntgenovou difrakčnou analýzou a IČ spektroskopiou. Z analýzy sa identifikovali príslušné fázy vo všetkých získaných frakciách, či už bulk taveniny alebo kondenzátov. Pri korelovaní údajov z fyzikálnochemických a štruktúrnych vlastností sa navrhli možné deje, prebiehajúce v skúmaných systémoch.

Výsledky sú zhrnuté v prácach:

1. ŠIMKO F. Thermal analysis of $(\text{NaF/AlF}_3)\text{-FeF}_3$ and $(\text{NaF/AlF}_3)\text{-FeO}$ systems. In Chemical papers, 2012, vol. 66, p. 235-238.
2. PAVLÍK V. - BOČA M. Corrosion of titanium diboride in molten FLiNaK(eut) . In Chemical papers, 2012, vol. 66, p. 1073-1077.
3. ŠIMKO F. - PRITULA O. - RAKHMATTULIN A. - BESSADA C. The study of the system $\text{Na}_3\text{AlF}_6\text{-FeF}_3$. Journal of Fluorine Chemistry, 2012, vol. 144, p. 137-142.
4. KUBÍKOVÁ B. - PAVLÍK V. - MACKOVÁ I. - BOČA M. Surface tension and viscosity of the molten $(\text{LiF-NaF-KF})_{\text{eut}}\text{-K}_2\text{ZrF}_6$ system. In Monatshefte für Chemie, 2012, vol. 143, p. 1459-1462.
5. BOČA M. - BARBORÍK P. - MIČUŠÍK M. - OMASTOVÁ M. X-ray photoelectron spectroscopy as detection tool for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF , K_2TaF_7 , K_3TaF_8 , K_2ZrF_6 , $\text{Na}_7\text{Zr}_6\text{F}_{31}$ and K_3ZrF_7 . In Solid State Sciences, 2012, vol. 14, p. 828 - 832.

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

Zodpovedný riešiteľ: Peter Šimurka
Trvanie projektu: 1.1.2012 / 31.12.2015
Evidenčné číslo projektu: 2/0165/12
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 - Slovensko: 2
Čerpané financie: SAV: 4339 €

Dosiahnuté výsledky:

Metódou SEM a EDX boli analyzované vzorky skorodovaného žiaromateriálu po skončení kampane z dvoch taviacich agregátov. Vzorky boli odobrané z rôznych častí taviaceho agregátu tak z oblasti kontaktu materiálu so sklovinou ako aj z oblasti stien nad hladinou skloviny.

Výsledky boli prezentované v prednáške:

ŠIMURKA P. - KLEMENT R. - SEDLÁČEK J. - KRAXNER J. Corrosion of refractories used in a melting of industrially produced tableware glass, 11th European Society on Glass Conference, Maastricht, Holandsko, 3.-6.6.2012.

Programy: APVV

14.) Anorganické fluoridové taveniny - komplexné štúdium spektrálnych, difrakčných, fyzikálnochemických, termodynamických a štruktúrnych charakteristík (*Inorganic fluoride melts - the complex study of spectral, diffraction, physicochemical, thermodynamical and structural characteristics*)

Zodpovedný riešiteľ: Miroslav Boča
Trvanie projektu: 1.5.2011 / 30.4.2014
Evidenčné číslo projektu: APVV-0460-10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 83333 €

Dosiahnuté výsledky:

1. BOČA M. - BARBORÍK P. - MIČUŠÍK M. - OMASTOVÁ M. X-ray photoelectron spectroscopy as detection tool for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF, K_2TaF_7 , K_3TaF_8 , K_2ZrF_6 , $Na_7Zr_6F_{31}$ and K_3ZrF_7 . In Solid State Sciences, 2012, vol. 14, p. 828 - 832.
2. PAVLÍK V. - BOČA M. Corrosion of titanium diboride in molten FLiNaK(eut). In Chemical papers, 2012, vol. 66, p. 1073-1077.
3. KUBÍKOVÁ B. - PAVLÍK V. - MACKOVÁ I. - BOČA M. Surface tension and viscosity of the molten (LiF-NaF-KF)eut- K_2ZrF_6 system. In Monatshefte für Chemie, 2012, vol. 143, p. 1459-1462.

15.) 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: 9974 €

Dosiahnuté výsledky:

V poslednom období riešenia projektu bol výskum venovaný vyhodnocovaniu korózneho správania sa vybraných konštrukčných materiálov v sústave (FLiNaK)_{eut}- K_2ZrF_6 . Porovnávalo sa správanie sa dvoch materiálov s rozdielnym obsahom Ni, pričom vplyvujúcimi parametrami na priebeh korózie boli pracovná teplota, použitá atmosféra, úprava materiálu pred experimentmi, atď. Výsledky okrem iného ukázali, že prítomnosť kyslíka má podstatný vplyv na rýchlosť korózie a vzhľadom na minimalizáciu korózneho ataku na konštrukčné materiály by mal byť jeho obsah minimálny.

Doterajšie výsledky sú zhrnuté v prácach:

KUBÍKOVÁ B. - PAVLÍK V. - MACKOVÁ I. - BOČA M. Surface tension and viscosity of the molten (LiF-NaF-KF)eut- K_2ZrF_6 system. In Monatshefte für Chemie, 2012, vol. 143, p. 1459-1462.

16.) 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: 20750 €

Dosiahnuté výsledky:

Uskutočnila sa cieľená syntéza fluoridozirkoničitanu sodného ($Na_7Zr_6F_{31}$) potrebného na meranie fázových rovnováh, ako aj fyzikálno-chemických vlastností (hustota, viskozita) systému (FLiNaK)_{eut} - $Na_7Zr_6F_{31}$. Zo spomenutých meraní boli spracované a vyhodnotené výsledky. Sledovala sa korózna odolnosť zirkóniových materiálov v prostredí taveniny (FLiNaK)_{eut} - K_2ZrF_6 pri teplote 680 °C. Korózna odolnosť sa sledovala pomocou hmotnostného úbytku na materiály po koróznom teste a vykonala sa analýza povrchu a priečného rezu vzoriek.

Publikácie:

1. BARBORÍK P. - BOČA M. Fázové rovnováhy a hustota systému LiF-NaF-KF-ZrF₄. In Pokroky v anorganickej chémii, 18.-21. 06 2012, Zborník príspevkov z IX. seminára. Bratislava, Univerzita Komenského Bratislava, 2012, s. 42-44.
2. BOČA M. - BARBORÍK P. - MIČUŠÍK M. - OMASTOVÁ M. X-ray photoelectron spectroscopy as detection tool

for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF, K₂TaF₇, K₃TaF₈, K₂ZrF₆, Na₇Zr₆F₃₁ and K₃ZrF₇. In Solid State Sciences, 2012, vol. 14, p. 828 - 832.

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

Zodpovedný riešiteľ: Juraj Bujdák
Trvanie projektu: 1.7.2012 / 31.12.2015
Evidenčné číslo projektu: APVV-0291-11
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 2 - Slovensko: 2
Čerpané financie: APVV: 13994 €

Dosiahnuté výsledky:

Projekt začal v polovici kalendárneho roka. Po úvodnom stretnutí riešiteľského kolektívu prebiehali v jednotlivých laboratóriách pilotné experimenty. Tie boli zamerané na prípravu a charakterizáciu hybridných materiálov na báze fotoaktívnych organických látok a anorganických nosičov na báze smektitov. Práce nadväzovali na skúsenosti pracovísk nadobudnutých v minulých projektoch. Boli rozpracované jednotlivé metodiky prípravy, materiálov a charakterizácie niektorých fotochemických a fotofyzikálnych vlastností.

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

Zodpovedný riešiteľ: Dušan Galusek
Trvanie projektu: 1.7.2012 / 31.12.2015
Evidenčné číslo projektu: APVV-0218-11
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 3 - Slovensko: 3
Čerpané financie: APVV: 12295 €

Dosiahnuté výsledky:

Projekt začal v druhej polovici roka 2012 a experimentálna práca sa zameriavala najmä na vývoj metodiky hodnotenia korózie ľudských zubov in vitro vo vybraných kyslých nápojoch, ako aj na vývoj metodík analýzy používaných korózných médií pred a po korózii. Predbežné výsledky ukazujú, že obsah fosforu v koróznom médiu stúpa s teplotou a s dĺžkou expozície vzorky. V kvázi-dynamických podmienkach boli zaznamenané vyššie kumulatívne obsahy Ca a P. Ku korózií ľudských zubov v kyslom prostredí bieleho vína dochádza v dôsledku kongruentného rozpúšťania minerálneho hydroxyapatitu. U korodovaných vzoriek sa pozorovalo viditeľné porušenie zubnej skloviny, demonštrované zvýraznením hraníc medzi jednotlivými zrnami hydroxyapatitu a zdrsnením vlastného povrchu zŕn hydroxyapatitu. Priemerné hodnoty tvrdosti aj elastického modulu sa po korózii vo víne významne znížili. Korózia v testovanom druhu bieleho vína má výrazne negatívny vplyv na tvrdosť a elastický modul zubnej skloviny.

Výsledky sú zhrnuté v prácach:

GAALOVÁ P. - ŠIMÁKOVÁ A. - GALUSKOVÁ D. - LOFAJ F. - GALUSEK D. Biomaterials for dental replacements - mechanisms and kinetics of corrosion. In Progress in advanced ceramic materials, 27.-28.11.2012, Institute of Materials Research SAS, Košice, Workshop Book of Abstracts, p. 14.

19.) 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: 11174 €

Dosiahnuté výsledky:

Bola vyvinutá metóda prípravy sklených mikroguličiek v kvázibinárnych systémoch $\text{Al}_2\text{O}_3\text{-RE}_2\text{O}_3$ ($\text{RE} = \text{La}, \text{Y}, \text{Yb}$) a kváziternárnych systémoch $\text{Al}_2\text{O}_3\text{-Re}_2\text{O}_3\text{-MexO}_y$, kde $\text{Me} = \text{Si}, \text{Zr}$, $x = 1$, $y = 2$ sú sklotvornosť zvyšujúce oxidové prísady SiO_2 , ZrO_2 . Vyvinuli sa tri metódy prípravy prekursorových práškov (syntéza v tuhej fáze, zrážacia metóda a metóda sól-gél), pričom na základe požiadaviek na vysokú homogenitu je za najvhodnejšiu možné považovať modifikovanú Pechiniho metódu. Zároveň sa optimalizovali podmienky plameňovej syntézy sklených mikroguličiek a skonštruoval sa systém dávkovania práškov, roztokov a sólov. Metódou žiarového lisovania pri tlaku 30 MPa pri teplotách v rozmedzí od 900 do 1600 °C sa pripravili kusové vzorky materiálov s požadovaným zložením, s eutektickou mikroštruktúrou a s vysokou tvrdosťou. Na základe výsledkov štúdia kinetiky kryštalizácie pripravených hlinitanových skiel pomocou diferenciálnej skenovacej kalorimetrie kombinovanej s vysokoteplotnou RTG difrakciou sa získali údaje, ktoré slúžia ako podklady pre vývoj optimálneho teplotného režimu pre nukleáciu a kryštalizáciu nanokryštalických aluminátov vzácných zemin a stanovenie optimálnej objemovej frakcie kryštalických fáz, ktoré súčasne zabezpečia zlepšenie mechanických vlastností sklokeramiky pri zachovaní jej dostatočnej optickej priepustnosti. Celkovo sa pripravilo 50 systémov (binárnych, ternárnych a kvarternárnych) hlinitanových skiel vo forme mikroguličiek a vykonala sa rozsiahla charakterizácia vlastností vybraných pripravených systémov pomocou RTG difrakcie, optickej a skenovacej elektrónovej mikroskopie, infračervenej, reflexnej UV-VIS-NIR a flourescenčnej spektroskopie, ako aj ďalšie ^{27}Al MAS NMR, ktoré slúžia ako základ pre interpretáciu štruktúry pripravených skiel, vzťahov medzi ich štruktúrou a zložením, a vplyvu štruktúry na ich fotoluminiscenčné vlastnosti.

Výsledky sú zhrnuté v prácach:

1. HALIAKOVÁ A. - PRNOVÁ A. - KLEMENT R. - GALUSEK D. - TUAN W.-H. Flame-spraying synthesis of aluminate glasses in the $\text{Al}_2\text{O}_3\text{-La}_2\text{O}_3$ system. In *Ceramics International*, 2012, vol. 38, p. 5543-5549.
2. KLEMENT R. - PRNOVÁ A. - DOMANICKÁ A. - GALUSEK D. - GHILLÁNYOVÁ K. - CZIMEROVÁ A. - HRONSKÝ V. - OLČÁK D. Preparation, characterization and photoluminescence properties of yttrium aluminate and aluminosilicate glasses doped with rare-earth ions, *Acta Electrotechnica et Informatica*, 2012, prijaté do tlače
3. GALUSEK D. - KLEMENT R. - PRNOVÁ A. Aluminate glass and glass ceramic phosphors. In *CMCEE - 10th international symposium on ceramic materials and components for energy and environmental applications*, Program and abstracts, Dresden, Fraunhofer IKTS, 2012, p. 108.
4. PRNOVÁ A. - KLEMENT R. - GALUSEK D. - DOMANICKÁ A. - HALIAKOVÁ A., KRAXNER J. - MIGÁT M. - HRUŠKA B. - ŠAJGALÍK P. - GHILLÁNYOVÁ K. Preparation and characterization of glasses, ceramics and glass-ceramic materials in the systems $\text{Re}_2\text{O}_3 - \text{Al}_2\text{O}_3$, 22. 3. 2012, University of Ghent, Belgium.
5. KLEMENT R. - PRNOVÁ A. - DOMANICKÁ A. - HRUŠKA B. - GALUSEK D. - GHILLÁNYOVÁ K. - HRONSKÝ V. - OLČÁK D. Preparation and Characterization of Nd^{3+} , Er^{3+} -singly Doped and $\text{Er}^{3+}/\text{Yb}^{3+}$ -Codoped Low Silica Yttrium Aluminosilicate Glasses, *Living Glass*, Cambridge 2012.

20.) Vývoj nitridu kremičitého s prídavkom multivrstiev grafénu (Development of Si_3N_4 with addition of grapheme platelets)

Zodpovedný riešiteľ:	Monika Kašiarová
Zodpovedný riešiteľ v organizácii SAV:	Pavol Šajgalík
Trvanie projektu:	1.7.2012 / 31.12.2015
Evidenčné číslo projektu:	APVV-0161-11
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 20000 €

Dosiahnuté výsledky:

Projekt sa nachádza vo svojej prvej etape riešenia, ktorej cieľom bolo zvládnutie procesu homogénnej distribúcie grafénových vrstiev vo východiskovej zmesi práškov. Paralelne sa pracovalo na stanovení vplyvu rôznych spekacích prísad z hľadiska možných reakcií s grafénovou multivrstvou, ako aj na príprave série experimentálnych materiálov Si_3N_4 s rôznymi objemovými prídavkami multivrstiev grafénu za použitia dvoch rôznych metód zhutňovania (horúce lisovanie, spekanie za vysokého pretlaku inertného plynu). Rozsah experimentálnej práce a množstvo získaných výsledkov je v súlade s harmonogramom riešenia projektu, čo dáva predpoklad pre úspešné riešenie celého projektu.

21.) 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: 1 - Slovensko: 1
Čerpané financie: APVV: 23148 €

Dosiahnuté výsledky:

Školský rok 2011/2012: 5107 žiakov základných škôl a 534 študentov stredných škôl

Školský rok 2012/2013: 4476 žiakov základných škôl a 390 študentov stredných škôl (pozn. pre tento školský rok sú aktivity len započaté)

V roku 2012 sa do aktivít zapojilo spolu 10507 študentov.

V rámci projektu sa uskutočnili 3 odborné sústreďenia, ktorých sa zúčastnilo 106 študentov.

Bolo vydaných 9 zborníkov súťažných úloh a učebné texty pre odborné sústreďenia.

22.) Organoilý a ich kompozity s polymérmi (*Organoclays and their composites with polymers*)

Zodpovedný riešiteľ: Peter Komadel
Trvanie projektu: 1.5.2011 / 31.10.2014
Evidenčné číslo projektu: APVV-0362-10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 - Slovensko: 1
Čerpané financie: APVV: 39000 €

Dosiahnuté výsledky:

Riešenie projektu postupovalo podľa vytýčeného harmonogramu. Urobila sa cielená charakterizácia pripravených organoilov vybranými experimentálnymi technikami. Overila sa stabilita organoilov v kyslom prostredí a postup syntézy hydroxyderivátov alkylamónnych solí z prekursorov alifatických organických molekúl, ktoré majú dvojité väzby. Oktylamónne deriváty montmorillonitu Jelšový Potok sa použili na testy ako plnivá v prírodnom kaučuku. Zistilo sa, že malé organokatióny majú iba malý vplyv na mechanické vlastnosti polymérnych kompozitov, ktoré sa zlepšujú pri použití organoilov s väčšou vzdialenosťou vrstiev. Pokračovalo sa vo výpočtoch interakcií ilový minerál-organická fáza s cieľom získať čo najviac informácií o štruktúre a vzájomných interakciách v organoiloch.

Výsledky sú zhrnuté v prácach:

1. MADEJOVÁ J. - PÁLKOVÁ H. - JANKOVIČ Ľ. Degradation of surfactant-modified montmorillonites in HCl. In Materials Chemistry and Physics, 2012, vol. 134, p. 768-776.
2. HRACHOVÁ J. - KOMADEL P. - JOCHEC-MOŠKOVÁ D. – KRAJČI J. - JANIGOVÁ I. - ŠLOUF M. – CHODÁK I. Properties of organo-clay/natural rubber nanocomposites. Effects of organophilic modifiers. In Journal of Applied Polymer Science, 2013, vol. 127, p. 3447-3455.
3. MATUSIK J. - SCHOLTZOVÁ E. - TUNEGA D. Influence of synthesis conditions on the formation of a kaolinite-methanol complex and simulation of its vibrational spectra. In Clays and Clay Minerals, 2012, vol. 60, p. 227-239.
4. SMRČOK Ľ. - KOLESNIKOV A.I. - RIEDER M. Combined inelastic neutron scattering and solid-state DFT study of dynamics of hydrogen atoms in trioctahedral 1M phlogopite. In Physics and Chemistry of Minerals, 2012, vol. 39, p. 779-787.
5. PÁLKOVÁ H. - HRONSKÝ V. - JANKOVIČ Ľ. - MADEJOVÁ J. The effect of acid treatment on the structure and surface acidity of tetraalkylammonium-montmorillonites, Journal of Colloid and Interface Science (prijaté do tlače)

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

Zodpovedný riešiteľ: Marek Liška
Trvanie projektu: 1.7.2012 / 31.12.2015
Evidenčné číslo projektu: APVV-0487-11
Organizácia je koordinátorom projektu: nie
Koordinátor: Trenčianska univerzita Alexandra Dubčeka v Trenčíne
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 10608 €

Dosiahnuté výsledky:

Od začiatku projektu (1.7.2012) bola hlavná pozornosť riešiteľov projektu zameraná na experimentálnu časť a to príprave skiel a boli zamerané niektoré fyzikálne vlastnosti.

Výsledky sú zhrnuté:

CHROMČÍKOVÁ M. - LIŠKA M. - VLČKOVÁ P. - GAŠPÁREKOVÁ E. Thermodynamic model and principal component analysis of Raman spectra of $15(\text{Na}_2\text{O}, \text{K}_2\text{O}).10(\text{CaO}, \text{ZnO}).75(\text{ZrO}_2, \text{SiO}_2)$ glasses. European symposium on atomic spectrometry 2012, XXth Slovak-Czech Spectroscopic Conference, Tatranská Lomnica, p. 145.

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: 20750 €

Dosiahnuté výsledky:

BÜHL M. - KNIGHT F.R. - KŘÍSTKOVÁ A. - MALKINA O.L. - RANDALL R.A.M. - SLAWIN A.M.Z. - WOOLLINS J.D. Weak Te,Te Bonding Through the Looking Glass of NMR Spin-Spin Coupling, Angewandte Chemie, 2012 (prijaté do tlače).

25.) Relativistické výpočty parametrov NMR a EPR spektroskopie pre zlúčeniny obsahujúce ťažké prvky: pokračovanie metodologického vývoja a aplikácie
(Relativistic calculations of parameters of NMR and EPR spectroscopy for compounds containing heavy elements: further methodological development and applications)

Zodpovedný riešiteľ:	Vladimír Malkin
Trvanie projektu:	1.5.2011 / 30.4.2014
Evidenčné číslo projektu:	APVV-0483-10
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 37237 €

Dosiahnuté výsledky:

Pomocou kvantovo-chemického programu ReSpect bolo skúmaných niekoľko komplexov obsahujúcich Ni-II, ktoré sú zaujímavé ako potenciálne jednomolekulové magnety. Výpočty elektrónového g-tenzora a štiepenia pri nulovom poli boli vykonané na jedno-, dvoj-, a štvor-komponentnej úrovni. Získané výsledky boli porovnané s dostupnými experimentálnymi dátami. Dospelo sa k záveru, že predpoklady, ktoré sú bežne používané na interpretáciu SQUID meraní na NI-II komplexoch, sú otáznne.

26.) 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 koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 11070 €

Dosiahnuté výsledky:

Rozpracovanie Mk-MR-CCSD metódy s použitím Slaterovho geminálu ako korelačného faktora o zahrnutie triexcitácií na aproximovanej úrovni cez zovšeobecnenú poruchovú teóriu s presnosťou do štvrtého poriadku. Tento krok si vyžadoval zďaleka nie triviálne teoretické spracovanie a podstatné zásahy do nášho výpočtového softvéru. Triexcitácie sa zahrnuli aproximatívne v rámci zovšeobecnenej poruchovej teórie, na úrovni, ktorá sa označuje ako (T).

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

Zodpovedný riešiteľ: Ľubomír Smrčok
Trvanie projektu: 1.7.2012 / 31.12.2015
Evidenčné číslo projektu:
Organizácia je koordinátorom projektu: nie
Koordinátor: Fakulta chemickej a potravinárskej technológie STU
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 1635 €
Dosiahnuté výsledky:

28.) Luminiscenčné vlastnosti oxynitridov a nitridov kremíka pripravených z organokovových prekurzorov (*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: 9018 €
Dosiahnuté výsledky:

Vecné ciele projektu boli splnené (Záverečná hodnotiaca správa riešenia projektu z APVV).

ŠAJGALÍK P. - LENČEŠ Z. - PLACHKÝ T. - RIEDEL R. - KLEEBE H.J. Functionalization of nitride engineering ceramics by polymer derived sintering aids. In ISNT2012 - 7th international symposium on nitrides, 3.-6.6.2012, Programme, Institut des Sciences Chimiques de Rennes, France, p. 21.

29.) Vývoj kompozitných biomateriálov na báze nitridu kremičitého (*Development of composite biomaterials based on silicon nitride*)

Zodpovedný riešiteľ: Pavol Šajgalík
Trvanie projektu: 1.5.2011 / 31.10.2014
Evidenčné číslo projektu: APVV-0500-10
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií: 1 - Slovensko: 1
Čerpané financie: APVV: 54001 €
Dosiahnuté výsledky:

V rámci uplynulej etapy projektu sa podarilo optimalizovať prípravu pórovitej keramickej Si₃N₄ matrice, kde ako pórtvorné činidlo bola použitá PU pena. Pripravené keramické matrice boli podrobne charakterizované z hľadiska mechanických vlastností, pórovitosti, chemického a fázového zloženia. Paralelne boli charakterizované vzorky trabekulárnej ľudskej kosti. Získané výsledky budú určujúcim faktorom pri ďalšej optimalizácii vlastností keramických matric. Príprava bioaktívnej zložky vo forme hydroxyapatitu metódou sól-gel je rovnako dobre zvládnutá. Momentálne prebiehajú na pripravených vzorkách biologické testy s cieľom overiť vhodnosť (čistota, prítomnosť nežiaducich prvkov, ktoré by mohli spôsobovať toxicitu) použitých východiskových materiálov, prípadne postup ich prípravy.

Výsledky sú zhrnuté v prácach:

1. KAŠIAROVÁ M. - VILČEKOVÁ Z. - GHILLÁNYOVÁ K. - HNATKO M. - DUSZA J. - ŠAJGALÍK P. Mechanical properties of porous silicon nitride. In LMP 2012 - Local mechanical properties, 9th International Conference, 7.-9.11.2012, Book of Abstracts, Hutnícka fakulta TU, p. 33.
2. KAŠIAROVÁ M. - GHILLÁNYOVÁ K. - VILČEKOVÁ Z. - HNATKO M. - DUSZA J. - ŠAJGALÍK P. Mechanical properties of the porous Si₃N₄ ceramics. Fractography 2012 - International conference, Stará Lesná, 21.-24.10.2012. In Fraktografia - Book of abstracts, Ústav materiálového výskumu SAV, Košice, p. 49.
3. HNATKO M. - BODIŠOVÁ K. - DOMANICKÁ M. - ŠAJGALÍK P. - LOFAJ F. - VOJTAŠŠÁK J. Characterizations and in vitro assessment of the cytotoxicity and genotoxicity of a novel Si₃N₄ porous ceramics. In Progress in Advanced Ceramic Materials, Workshop Book of Abstracts, 27.-28.11.2012, Institute of Materials Research

SAS, p. 18.

4. VILČEKOVÁ Z. - KAŠIAROVÁ M. - BODIŠOVÁ K. - HNATKO M. - DUSZA J. - ŠAJGALÍK P. - GROMOŠOVÁ S. Mechanical properties of biomaterials based on Si₃N₄. In Progress in advanced ceramic materials, 27.-28.11.2012, Workshop Book of Abstracts. Institute of Materials Research SAS, Košice, p. 34.
5. BODIŠOVÁ K. - DOMANICKÁ M. - HNATKO M. - GROMOŠOVÁ S. - VARCHOLOVÁ Z. - VOJTAŠŠÁK J. - ŠAJGALÍK P. Porous silicon nitride based ceramics designed for bioapplications. In Progress in Advanced Ceramic Materials, 27.-28.11.2012, Košice, Workshop Book of Abstracts, Institute of Materials Research SAS, p. 8.
6. LENČEŠ Z. - POLÁKOVÁ P. - HNATKO M. - ŠAJGALÍK P. Porous biomaterials based on silicon nitride. In Progress in Advanced Ceramic Materials, 27.-28.11.2012 Košice, Workshop Book of Abstracts, Institute of Materials Research SAS, p. 26.

Programy: Štrukturálne fondy EÚ Výskum a vývoj

30.) Aplikovaný výskum technológií plazmotermických procesov (*Applied Research of Technology of Plasma-thermal processes*)

Zodpovedný riešiteľ:	Miroslav Boča
Trvanie projektu:	1.1.2011 / 31.12.2013
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Geothermal Anywhere, s.r.o.
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	MŠ: 35213 €

Dosiahnuté výsledky:

Boli analyzované rôzne horninové vzorky so zámerom opísať ich správanie v závislosti od teploty.

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

Zodpovedný riešiteľ:	Miroslav Boča
Trvanie projektu:	1.4.2010 / 31.3.2012
Evidenčné číslo projektu:	ITMS kód: 26240120021
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	3 - Slovensko: 3
Čerpané financie:	MŠ: 730132 €

Dosiahnuté výsledky:

V zmysle zámeru projektu boli obstarané špičkové zariadenia potrebné na zvýšenie kvality odborných výstupov. Tieto prístroje boli aj nainštalované a uvedené do prevádzky a v súčasnosti sú k dispozícii pre využitie aj v širšej vedeckej komunite. Výsledkom používania prístrojov sú aj vedecké výstupy.

32.) Centrum excelentnosti pre keramiku, sklo a silikátové materiály (*Center of Excellence for Ceramics, glass and silicate materials*)

Zodpovedný riešiteľ:	Dušan Galusek
Trvanie projektu:	1.6.2010 / 31.5.2013
Evidenčné číslo projektu:	ITMS 262 201 20056
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav anorganickej chémie SAV
Počet spoluriešiteľských inštitúcií:	2 - Slovensko: 2
Čerpané financie:	MŠ: 1204761 €

Dosiahnuté výsledky:

V rámci projektu sa v roku 2012 ukončili výberové konania na kompletné prístrojové vybavenie plánované a obstarávané v rámci projektu.

V rámci centra sa zakúpilo a nainštalovalo nasledovné experimentálne vybavenie: elektrónový mikroskop s EDW/WDS/EBSD detektormi, práškový RTG difraktometer s vysokoteplotnou a humiditnou celou, potenciostat s

frekvenčným analyzátorom, vysokoteplotná pec do 1800 °C a vybavenie na úpravu a keramografickú prípravu vzoriek.

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

Zodpovedný riešiteľ:	Marián Janek
Zodpovedný riešiteľ v organizácii SAV:	Peter Šimurka
Trvanie projektu:	1.9.2009 / 28.2.2012
Evidenčné číslo projektu:	ITMS kód:26240220006
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Technologický inštitút SAV
Počet spoluriešiteľských inštitúcií:	4 - Slovensko: 4
Čerpané financie:	MŠ: 731 €
<u>Dosiahnuté výsledky:</u>	

34.) Efektívne riadenie výroby a spotreby energie z obnoviteľných zdrojov - ENERGOZ (*Effective control of production and consumption of energy from renewable sources - ENERGOZ*)

Zodpovedný riešiteľ:	Marián Janek
Zodpovedný riešiteľ v organizácii SAV:	Jaroslav Sedláček
Trvanie projektu:	1.4.2010 / 31.3.2013
Evidenčné číslo projektu:	ITMS kód: 26240220028
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Technologický inštitút SAV
Počet spoluriešiteľských inštitúcií:	5 - Slovensko: 5
Čerpané financie:	MŠ: 94694 €

Dosiahnuté výsledky:

V rámci čiastkových výskumných úloh projektu boli na ÚACH SAV vyvíjané a skúmané vlastnosti vysokoúčinných lumínofórov na báze ternárnych nitridov. V rámci uplynulých etáp projektu bola úspešne zvládnutá príprava lumínofórov na báze ternárneho nitridu kremičitého s horčíkom, resp. lantanom dopovaných iónmi európie v rôznom oxidačnom stupni a v koncentračnom rozsahu do 6 mol.%. Na základe teoretických výpočtov elektrónovej štruktúry boli získané poznatky o šírke zakázaného pásu skúmaných ternárnych nitridov pomocou programového balíku VASP (Vienna ab initio simulation package). Pomocou spektroskopických metód ako fluorescenčná a UV spektrometria boli sledované luminiscenčné vlastnosti pripravených materiálov najmä s ohľadom na aplikačnú využiteľnosť podľa cieľov projektu.

HRABALOVÁ M. - LENČEŠ Z. - CZÍMEROVÁ A. - ŠAJGALÍK P. Europium and cerium-doped ternary silicon nitride-based phosphors. In Progress in Advanced Ceramic Materials 27.-28.11.2012, Košice, Workshop Book of Abstracts, Institute of Materials Research SAS, 2012, p. 19.

35.) Generátor vysokoprúdovej plazmy na báze kompozitných materiálov pre účely gazifikácie pevných uhľovodíkov - PLASMAT (*High-flow plasma generator based on composite materials for gasification of solid hydrocarbons - PLASMAT*)

Zodpovedný riešiteľ:	Jaroslav Sedláček
Trvanie projektu:	1.10.2010 / 31.3.2013
Evidenčné číslo projektu:	ITMS 26240220054
Organizácia je koordinátorom projektu:	nie
Koordinátor:	CELIM Slovakia
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	MŠ: 66 €

Dosiahnuté výsledky:

Projekt bol zameraný na prípravu keramických materiálov a keramických kompozitov na báze oxidov, karbidov, boridov a nitridov s funkčnými vlastnosťami, najmä elektrickou vodivosťou, a dobrými mechanickými vlastnosťami, ktoré by bolo možné využiť v konštrukcii plazmatrónu na gazifikáciu pevných uhľovodíkov. V rámci projektu boli skúmané systémy využívajúce vynikajúce vlastnosti uhlíkových nanorúrok ako aj kovo-keramických kompozitov. Na

pripravených materiáloch boli sledované mechanické vlastnosti (tvrdosť, lomová húževnatosť, pevnosť v ohybe) a elektrická vodivosť meraná štvorbodovou metódou. V súvislosti s požiadavkou partnera projektu boli taktiež pripravené pórovité keramické materiály s rôznym stupňom pórovitosti (40-70 %), na ktorých bola následne na partnerskom pracovisku sledovaná ich využiteľnosť, napr. pre infiltráciu roztaveným kovom a teda prípravu kompozitného materiálu.

Výsledky jednotlivých skúmaní boli použité v nižšie uvedených výstupoch:

1. SEDLÁČEK J. - HANZEL O. - ŠAJGALÍK P. Alumina-carbon composites: preparation and properties. In Progress in advanced ceramic materials, 27.-28.11.2012 Košice, Workshop Book of Abstracts, Institute of Materials Research SAS, 2012, p. 33.
2. FRAJKOROVÁ F. - HNATKO M. - LENČEŠ Z. - ŠAJGALÍK P. Electrically conductive silicon carbide with the addition of Ti-NbC. In Journal of the European Ceramic Society, 2012, vol. 32, no. 10, p. 2513-2518.
3. FRAJKOROVÁ F. - LENČEŠ Z. - ŠAJGALÍK P. Electrically conductive silicon carbide without oxide sintering additives. In Journal of the Korean Ceramic Society, 2012, vol. 49, p. 342-346.
4. BYSTRICKÝ R. - HNATKO M. - LENČEŠ Z. - ŠAJGALÍK P. Príprava nanokompozitných keramických materiálov na báze Si₃N₄ pre rezanie ťažko obrábateľných materiálov. In Pokroky v anorganickej chémii, 18.-21. júna 2012, Zborník príspevkov z IX. seminára, Univerzita Komenského v Bratislave, s. 49-51.
5. DOMANICKÁ M. - GHILLÁNYOVÁ K. - HNATKO M. - ŠAJGALÍK P. Príprava a charakterizácia pórovitého nitridu kremičitého pre bioaplikácie. In Pokroky v anorganickej chémii, 18.-21.6.2012, Zborník príspevkov z IX. seminára, Univerzita Komenského v Bratislave, 2012, s. 55-57.
6. HANZEL O. - SEDLÁČEK J. - ŠAJGALÍK P. Elektrické vlastnosti Al₂O₃-C nanokompozitov. In Pokroky v anorganickej chémii, 18.-21. 6. 2012, Zborník príspevkov z IX. seminára, Univerzita Komenského v Bratislave, 2012, s. 63-65.

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

Zodpovedný riešiteľ:	Peter Šimurka
Trvanie projektu:	1.4.2010 / 31.3.2014
Evidenčné číslo projektu:	ITMS kód: 26220220072
Organizácia je koordinátorom projektu:	nie
Koordinátor:	RONA, a. s.
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	MŠ: 118531 €

Dosiahnuté výsledky:

V aktivite Priemyselný výskum nového spôsobu a technologických postupov tavenia skla bolo zrealizované verejné obstarávanie na zmluvný výskum k taveniu úžitkového skla. SEM a EDX boli analyzované vzorky skorodovaného žiaromateriálu po skončení kampane z dvoch taviacich agregátov. Vzorky boli odobrané z rôznych častí taviaceho agregátu tak z oblasti kontaktu materiálu so sklovinou ako aj z oblasti stien nad hladinou skloviny. Analýzou nehomogenít vyskytujúcich sa pri výrobe úžitkového skla sa určili hlavné typy vád a určil sa ich potenciálny zdroj.

Získané výsledky boli prezentované v prednáške:

ŠIMURKA P. - KLEMENT R. - SEDLÁČEK J. - KRAXNER J. Corrosion of refractories used in a melting of industrially produced tableware glass. 11th European Society on Glass Conference, Maastricht, Holandsko, 3.-6.6.2012

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

Zodpovedný riešiteľ:	Peter Šimurka
Trvanie projektu:	1.4.2010 / 31.3.2014
Evidenčné číslo projektu:	ITMS 26220220072
Organizácia je koordinátorom projektu:	nie
Koordinátor:	VÚEZ, a.s.
Počet spoluriešiteľských inštitúcií:	1 - Slovensko: 1
Čerpané financie:	MŠ: 432883 €

Dosiahnuté výsledky:

Zavŕšili sa experimentálne práce pri realizácii a vyhodnocovaní statických a prietokových lúžiacich testov v sústave sklovláknitá izolácia² - chladiivo² a v sústave sklovláknitá izolácia² - destilovaná voda. V sústave sklovláknitá izolácia² - destilovaná voda sa pozorovala morfológicky atypická korózia sklenených vlákien spojená s vytvorením sklovláknitých jadier voľne obalených korodovaným cylindrickým plášťom s výrazne väčším polomerom a veľmi malou hrúbkou. Realizoval sa veľký objem experimentálnych prác pri realizácii a vyhodnocovaní statických a prietokových lúžiacich testov v sústave sklená drvina² - chladiivo² a v sústave sklená drvina² - destilovaná voda. Získané výsledky boli prezentované na medzinárodnej konferencii Living glass 2012, 5. - 7. 9. 2012 v Cambridge, Veľká Británia.

1. PLŠKO A. - FATURÍKOVÁ K. - PAGÁČOVÁ J. - LIŠKA M. Study of physisorption of water on TiO₂-SiO₂-Al₂O₃ thin film by impedance spectroscopy.
2. CHROMČÍKOVÁ M. - LIŠKA M. - LISSOVÁ M. - MOŠNER P. - KOUDELMKA L. Structural relaxation of PbO-WO₃-P₂O₅ glasses.
3. LIŠKA M. - CHROMČÍKOVÁ M. - ŠULCOVÁ J. - MACHÁČEK J. - HOLUBOVÁ J. Overcoming of some shortcomings of the thermodynamic modeling of glass.
4. SOLTÉSZ V. - LIŠKA M. - CHROMČÍKOVÁ M. - FATURÍKOVÁ K. - VLČKOVÁ P. - KAŇKOVÁ H. Corrosion of 725QN glass fibers in borate water solution.
5. LIŠKA M. - CHROMČÍKOVÁ M. - HOLUBOVÁ J. Glass Structure & TD model. Zasadnutie technického výboru TC03 medzinárodnej sklárskej spoločnosti ICG, ktoré sa v rámci konferencie európskej sklárskej spoločnosti ESG konalo v Maastrichte dňa 3. júna 2012:
6. LIŠKA M. - CHROMČÍKOVÁ M. - HOLUBOVÁ J. - ČERNOŠKOVÁ E. - ČERNOŠEK Z. Thermodynamic model and Raman spectra of As₂O-Sb₂O-S_(60-x)-Sex glasses. Medzinárodná konferencia Solid state chemistry, ktorá sa v dňoch 10. -14.6.2012 konala v Pardubiciach.

Programy: Centrá excelentnosti SAV

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

Zodpovedný riešiteľ:	Marián Krajčí
Zodpovedný riešiteľ v organizácii SAV:	Pavol Šajgalík
Trvanie projektu:	1.8.2011 / 1.8.2015
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	SAV: 4100 €

Dosiahnuté výsledky:

Príloha C- Publikačná činnosť organizácie (zoradená podľa kategórií)**AAA Vedecké monografie vydané v zahraničných vydavateľstvách**

- AAA01 GALUSEK, Dušan. Al₂O₃-ZrO₂ ceramic composites by liquid infiltration : Preparation and properties. 1. Germany : LAP LAMBERT Academic Publishing GmbH & Co. KG, 2012. 117 p. ISBN 978-3-659-18416-1.

ADCA Vedecké práce v zahraničných karentovaných časopisoch impaktovaných

- ADCA01 BAČA, Ľuboš - LENČEŠ, Zoltán - JOGL, Christian - NEUBAUER, Erich - VITKOVIČ, Martin - MERSTALLINGER, Andreas - ŠAJGALÍK, Pavol. Microstructure evolution and tribological properties of TiB₂/Ni-Ta cermets. In Journal of the European Ceramic Society, 2012, vol. 32, no. 9, p. 1941-1948. (2.353 - IF2011). (2012 - Current Contents). ISSN 0955-2219.
- ADCA02 BAŇACKÝ, P. - NOGA, Jozef - SZÖCS, V. Toward possibility of high-temperature bipolaronic superconductivity in boron tubular polymorph: Theoretical aspects of transition into anti-adiabatic state. In Journal of Physics and Chemistry of Solids, 2012, vol. 73, p. 1044-1054. (1.632 - IF2011). (2012 - Current Contents). ISSN 0022-3697.
- ADCA03 BENCO, Ľubomír - BUČKO, Tomáš - HAFNER, Jürgen. Dehydrogenation of propane over Zn-MOR. Static and dynamic reaction energy diagram. In Journal of Catalysis, 2011, vol. 277, p. 104-116. (5.415 - IF2010). (2011 - Current Contents). ISSN 0021-9517.
- ADCA04 BENEDEK, R. - THACKERAY, M. M. - LOW, J. - BUČKO, Tomáš. Simulation of aqueous dissolution of lithium manganate spinel from first principles. In Journal of Physical Chemistry C, 2012, vol. 116, p. 4050-4059. (4.805 - IF2011). (2012 - Current Contents). ISSN 1932-7447.
- ADCA05 BOČA, Miroslav - BARBORÍK, Peter - MIČUŠÍK, Matej - OMASTOVÁ, Mária. X-ray photoelectron spectroscopy as detection tool for coordinated or uncoordinated fluorine atoms demonstrated on fluoride systems NaF, K₂TaF₇, K₃TaF₈, K₂ZrF₆, Na₇Zr₆F₃₁ and K₃ZrF₇. In Solid State Sciences, 2012, vol. 14, p. 828 - 832. (1.856 - IF2011). (2012 - Current Contents, WOS, SCOPUS). ISSN 1293-2558.
- ADCA06 BRTÁŇOVÁ, Anna - MELICHOVÁ, Zuzana - KOMADEL, Peter. Sorption of Cu²⁺ from aqueous solutions by Slovak bentonites. In Ceramics-Silikáty, 2012, vol. 56, no. 1, p. 55-60. (0.382 - IF2011). (2012 - Current Contents). ISSN 0862-5468.
- ADCA07 BUČKO, Tomáš - HAFNER, Jürgen - LEBÈGUE, Sébastien - ÁNGYÁN, János G. Spin crossover transition of Fe(phen)₂(NCS)₂: periodic dispersion-corrected density-functional study. In Physical Chemistry Chemical Physics, 2012, vol. 14, p. 5389-5396. (3.573 - IF2011). (2012 - Current Contents). ISSN 1463-9076.
- ADCA08 BUJDÁK, Juraj - IYI, Nobuo. Highly fluorescent colloids based on rhodamine 6G, modified layered silicate, and organic solvent. In Journal of Colloid and Interface Science, 2012, vol. 388, p. 15-20. (3.070 - IF2011). (2012 - Current Contents). ISSN 0021-9797.
- ADCA09 BUJDÁK, Juraj - DANKO, Martin - CHORVÁT, Dušan Jr. - CZÍMEROVÁ, Adriana - SÝKORA, J. - LANG, K. Selective modification of layered silicate nanoparticle edges with fluorophores. In Applied Clay Science, 2012, vol. 65-66, p. 152 - 157. (2.474 - IF2011). (2012 - Current Contents). ISSN 0169-1317.
- ADCA10 ČÁRSKY, Petr - ČURÍK, Roman - VARGA, Štefan. Efficient evaluation of Coulomb integrals in a mixed Gaussian and plane-wave basis using the density fitting and Cholesky decomposition. In Journal of Chemical Physics, 2012, vol. 136, no. 11, p. 114105-1-114105-8. (3.333 - IF2011). (2012 - Current Contents). ISSN 0021-9606.
- ADCA11 ČERNÝ, Radovan - RAVNSBAEK, Dorthe B. - SCHOUWINK, Pascal - FILINCHUK, Yaroslav - PENIN, Nicolas - TEYSSIER, Jeremie - SMRČOK, Ľubomír - JENSEN, Torben R. Potassium zinc borohydrides containing triangular [Zn(BH₄)₃]⁻ and tetrahedral [Zn(BH₄)_xCl_{4-x}]₂⁻ anions. In Journal of Physical Chemistry C, 2012, vol. 116, no. 1, p. 1563-1571. (4.805 - IF2011). (2012 - Current Contents). ISSN 1932-7447.
- ADCA12 DECARREAU, Alain - VIGIER, Nathalie - PÁLKOVÁ, Helena - PETIT, Sabine -

- VIEILLARD, Philippe - FONTAINE, Claude. Partitioning of lithium between smectite and solution: An experimental approach. In *Geochimica et Cosmochimica Acta*, 2012, vol. 85, p. 314-325. (4.259 - IF2011). (2012 - Current Contents). ISSN 0016-7037.
- ADCA13 DEMEL, Ondřej - KEDŽUCH, Stanislav - ŠVAŇA, Matej - TEN-NO, Seiichiro - PITTNER, Jiří - NOGA, Jozef. An explicitly correlated Mukherjee's state specific coupled cluster method: development and pilot applications. In *Physical Chemistry Chemical Physics*, 2012, vol. 14, p. 4753-4762. (3.573 - IF2011). (2012 - Current Contents). ISSN 1463-9076.
- ADCA14 FRAJKOROVÁ, Františka - HNATKO, Miroslav - LENČEŠ, Zoltán - ŠAJGALÍK, Pavol. Electrically conductive silicon carbide with the addition of Ti-NbC. In *Journal of the European Ceramic Society*, 2012, vol. 32, no. 10, p. 2513-2518. (2.353 - IF2011). (2012 - Current Contents). ISSN 0955-2219.
- ADCA15 GALUSEK, Dušan - GHILLÁNYOVÁ, Katarína - SEDLÁČEK, Jaroslav - KOZÁNKOVÁ, Jana - ŠAJGALÍK, Pavol. The influence of additives on microstructure of sub-micron alumina ceramics prepared by two-stage sintering. In *Journal of the European Ceramic Society*, 2012, vol. 32, no. 9, p. 1965-1970. (2.353 - IF2011). (2012 - Current Contents). ISSN 0955-2219.
- ADCA16 GÖLTL, Florian - GRÜNEIS, Andreas - BUČKO, Tomáš - HAFNER, Jürgen. Van der Waals interactions between hydrocarbon molecules and zeolites: Periodic calculations at different levels of theory, from density functional theory to the random phase approximation and Møller-Plesset perturbation theory. In *Journal of Chemical Physics*, 2012, vol. 137, p. 114111-1-114111-17. (3.333 - IF2011). (2012 - Current Contents). ISSN 0021-9606.
- ADCA17 HALIAKOVÁ, Anna - PRNOVÁ, Anna - KLEMENT, Róbert - GALUSEK, Dušan - TUAN, Wei-Hsing. Flame-spraying synthesis of aluminate glasses in the Al₂O₃-La₂O₃ system. In *Ceramics International*, 2012, vol. 38, no. 7, p. 5543-5549. (1.751 - IF2011). (2012 - Current Contents). ISSN 0272-8842.
- ADCA18 HOLUBOVÁ, Jana - LIŠKA, Marek - CHROMČÍKOVÁ, Mária - ČERNOŠKOVÁ, Eva - ČERNOŠEK, Zdeněk. Structure of As₂S₃-Sb₂S₃ glasses by combined Raman spectroscopy and a thermodynamic modelling approach. In *Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B*, 2012, vol. 53, no. 2, p. 31-36. (0.628 - IF2011). (2012 - Current Contents). ISSN 1753-3562.
- ADCA19 HONTY, Miroslav - WANG, Lian - OSACKÝ, Marek - UHLÍK, Peter - CZÍMEROVÁ, Adriana - MADEJOVÁ, Jana. Experimental interactions of the Opalinus Clay and Boom Clay with various repository relevant solutions at 90 °C under closed conditions. In *Applied Clay Science*, 2012, vol. 59-60, p. 50-63. (2.474 - IF2011). (2012 - Current Contents). ISSN 0169-1317.
- ADCA20 HRACHOVÁ, Jana - KOMADEL, Peter - JANIGOVÁ, Ivica - ŠLOUF, Miroslav - CHODÁK, Ivan. Properties of rubber filled with montmorillonite with various surface modifications. In *Polymers for Advanced Technologies*, 2012, vol. 23, p. 1414 - 1421. (2.007 - IF2011). (2012 - Current Contents). ISSN 1042-7147.
- ADCA21 HROBÁRIK, Peter - HROBÁRIKOVÁ, Veronika - GREIF, Anja H. - KAUPP, M. Giant spin-orbit effects on NMR shifts in diamagnetic actinide complexes: guiding the search of uranium(VI) hydride complexes in the correct spectral range. In *Angewandte Chemie*, 2012, vol. 51, no. 43, p. 10884-10888. (13.455 - IF2011). (2012 - Current Contents). ISSN 1433-7851.
- ADCA22 CHOVANEC, Jozef - GHILLÁNYOVÁ, Katarína - RÁHEL, Jozef - ŠAJGALÍK, Pavol - GALUSEK, Dušan. The influence of dopants on loss tangent of polycrystalline alumina ceramics. In *Ceramics International*, 2012, vol. 38, no. 3, p. 2043-2049. (1.751 - IF2011). (2012 - Current Contents). ISSN 0272-8842.
- ADCA23 CHOVANEC, Jozef - GALUSEK, Dušan - RÁHEL, Jozef - ŠAJGALÍK, Pavol. Low loss alumina dielectrics by aqueous tape casting: The influence of composition on the loss tangent. In *Ceramics International*, 2012, vol. 38, no. 5, p. 3747-3755. (1.751 - IF2011). (2012 - Current Contents). ISSN 0272-8842.
- ADCA24 CHROMČÍKOVÁ, Mária - LIŠKA, Marek - KARELL, Radovan - GAŠPÁREKOVÁ, Eleonóra - VLČKOVÁ, Patrícia. Thermodynamic model and physical properties of selected zirconia containing silicate glasses. In *Journal of Thermal Analysis and Calorimetry*, 2012, vol. 109, no.

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- ADCA344 ZEMANOVÁ, Magdaléna - LECOMTE, E. - ŠAJGALÍK, Pavol - RIEDEL, R. Polysilazane derived micro/nano Si₃N₄/SiC composites. In *Journal of the European Ceramic Society*, 2002, vol. 22, no. 16, p. 2963-2968. ISSN 0955-2219.

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2. [1.1] ONBATTUVELLI, Valmikanathan - ATRE, Sundar. Review of Net Shape Fabrication of Thermally Conducting Ceramics. In *MATERIALS AND MANUFACTURING PROCESSES*, 2011, vol.26, no.6, 832., WOS

- ADCA345 ZHANG, B. - ZHUANG, H. - ŠAJGALÍK, Pavol. Laminate-structure ceramic composites.

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- ADCA346 ZHOU, You - YOSHIZAWA, Y. - HIRAO, Kiyoshi - LENČEŠ, Zoltán - ŠAJGALÍK, Pavol. Combustion synthesis of LaSi₃N₅:Eu²⁺ phosphor powders. In Journal of the European Ceramic Society, 2011, vol. 31, p. 151-157. (2.574 - IF2010). (2011 - Current Contents). ISSN 0955-2219.

Citácie:

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2. [1.1] TEN KATE, Otmar M. - HINTZEN, Hubertus T. - DORENBOS, Pieter - VAN DER KOLK, Erik. Yb³⁺ doped LaSi₃N₅ and YSi₃N₅ with low energy charge transfer for near-infrared light-emitting diode and solar cell application. In JOURNAL OF MATERIALS CHEMISTRY, 2011, vol. 21, no. 45, p. 18289-18294., WOS

- ADCA347 ZHOU, Y. - YOSHIZAWA, Y. - HIRAO, K. - LENČEŠ, Zoltán - ŠAJGALÍK, Pavol. Preparation of Eu-doped beta-SiAlON phosphors by combustion synthesis. In Journal of the American Ceramic Society, 2008, vol. 91, no. 9, p. 3082-3085.

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- ADCA348 ZHU, X.W. - ZHOU, Y. - HIRAO, K. - LENČEŠ, Zoltán. Processing and thermal conductivity of sintered reaction-bonded silicon nitride: (I) Effects of Si powder characteristics. In Journal of the American Ceramic Society, 2006, vol. 89, no. 11, p. 3331-3339. ISSN 0002-7820.

Citácie:

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- ADCA349 ZIKMUND, Miroslav - HRNČIAROVÁ, Klára. Anionic clays. Structure, synthesis, applications. In Chemické listy, 1997, vol. 91, no. 3, p. 169-178. (0.186 - IF1996). (1997 - Current Contents). ISSN 0009-2770.

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ADCB Vedecké práce v zahraničných karentovaných časopisoch neimpaktovaných

- ADCB01 FRANKOVSKÁ, J. - ANDREJKOVIČOVÁ, Slávka - JANOTKA, Ivan. Effect of NaCl on hydraulic properties of bentonite and bentonite-palygorskite mixture. In Geosynthetics International, 2010, vol. 17, no. 4, p. 250-259. (2010 - Current Contents). ISSN 1072-6349.

Citácie:

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ADD Vedecké práce v dom. karent. časopisoch a recenzovaných zborníkoch

- ADD01 HROBÁRIKOVÁ, Jana - KOMADEL, P. Sorption properties of reduced-charge montmorillonites. In Geologica Carpathica : international clay journal, 2002, roč. 53, č. 2, s. 93-98. ISSN 1210-2695.

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1. [1.1] GALAMBOS, Michal - ROSSKOPFOVA, Ol'ga - KUFCAKOVA, Jana - RAJEC, Pavol. Utilization of Slovak bentonites in deposition of high-level radioactive waste and spent nuclear fuel. In JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY, 2011, vol.288, no.3, 765., WOS

ADDA Vedecké práce v domácich karentovaných časopisoch impaktovaných

- ADDA01 ANDREJKOVIČOVÁ, Slávka - PENTRÁK, Martin - JANKOVIČ, Ľuboš - KOMADEL, Peter. Sorption of heavy metal cations on rhyolitic and andesitic bentonites from Central Slovakia. In *Geologica Carpathica*, 2010, vol. 61, no. 2, p. 163-171. (0.963 - IF2009). (2010 - Current Contents). ISSN 1335-0552.

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- ADDA02 ANDREJKOVIČOVÁ, Slávka - MADEJOVÁ, Jana - CZÍMEROVÁ, Adriana - GALKO, I. - DOHRMANN, R. - KOMADEL, Peter. Mineralogy and chemistry of Fe-rich bentonite from the Lieskovec deposit. In *Geologica Carpathica*. Series clays, 2006, vol. 57, no. 5, p. 371-378. ISSN 1210-2695.

Citácie:

1. [1.1] GALAMBOS, Michal - ROSSKOPFOVA, Ol'ga - KUFCAKOVA, Jana - RAJEC, Pavol. Utilization of Slovak bentonites in deposition of high-level radioactive waste and spent nuclear fuel. In *JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY*, 2011, vol.288, no.3, 765., WOS

- ADDA03 BOČA, Miroslav - FUESS, H. - IVANOVÁ, Zuzana. Systems of potassium oxofluorotantalates. In *Chemical Papers - Chemické zvesti*, 2005, vol. 59, no. 5-6, p. 304-309. ISSN 0366-6352.

Citácie:

1. [1.1] LAN, Changyong - GONG, Jiangfeng - WANG, Zhiqiang - YANG, Shaoguang. Synthesis of K₆Ta₁₀O₃₀ nanowires by molten salt technique. In *MATERIALS SCIENCE AND ENGINEERING B-ADVANCED FUNCTIONAL SOLID-STATE MATERIALS*, 2011, vol.176, no.8, 679., WOS

- ADDA04 ČÍČEL, B. - KOMADEL, Peter - BEDNÁRIKOVÁ, E. - MADEJOVÁ, Jana. Mineralogical composition and distribution of Si, Al, Fe, Mg and Ca in the fine fractions of some Czech and Slovak bentonites. In *Geologica Carpathica*, 1992, vol. 43, p. 3-7.

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1. [1.2] GALAMBOŠ, M. - ROSSKOPFOVÁ, O. - KUFČÁKOVÁ, J. - RAJEC, P. Utilization of Slovak bentonites in deposition of high-level radioactive waste and spent nuclear fuel. In *Journal of Radioanalytical and Nuclear Chemistry*, 2011, vol.288, no.3, 765-777., SCOPUS

- ADDA05 DANĚK, V. - NERÁD, Ivan. Phase diagram and structure of melts of the system CaO-TiO₂-SiO₂. In *Chemical Papers - Chemické zvesti*, 2002, vol. 56, no. 4, p. 241-246. ISSN 0366-6352.

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1. [1.1] HAJJAJI, W. - ZANELLI, C. - SEABRA, M. P. - DONDI, M. - LABRINCHA, J. A. Cr-doped perovskite and rutile pigments derived from industrial by-products. In *CHEMICAL ENGINEERING JOURNAL*, 2011, vol.171, no.3, 1178., WOS

- ADDA06 HRACHOVÁ, Jana - CHODÁK, Ivan - KOMADEL, Peter. Modification and characterization of montmorillonite fillers used in composites with vulcanized natural rubber. In *Chemical papers*, 2009, vol. 63, no. 1, p. 55-61. (0.758 - IF2008). (2009 - Current Contents). ISSN 0366-6352.

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1. [1.1] WANG, S.H. - YANG, S.M. Preparation and Characterization of PP-g -GMS -St For PP/O-MMT Composite Materials. In *ADVANCED MATERIALS, PTS 1-4*. ISSN 1022-6680, 2011, vol. 239-242, Part 1-4, p. 1143-1148., WOS

- ADDA07 HVIŽDOŠ, Pavol - KAŠIAROVÁ, Monika - DUSZA, Ján - HNATKO, Miroslav - ŠAJGALÍK, Pavol. Mechanické vlastnosti nanokompozitov Si₃N₄/SiC merané inštrumentovanou indentáciou sférickým indentorom. In *Kovové materiály*, 2004, roč. 42, č. 1, s. 51-62. ISSN 0023-432X.

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- ADDA08 JANEK, Marián - KOMADEL, Peter. Autotransformation of H-smectites in aqueous solution. The effect of octahedral iron content. In *Geologica Carpathica*, 1993, vol. 44, p. 59-64.

Citácie:

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- ADDA09 JANEK, Marián - KOMADEL, Peter. Acidity of proton saturated and autotransformed smectites characterized with proton affinity distribution. In *Geologica Carpathica : International Geological Journal*, 1999, vol. 50, no. 5, p. 373-378. (0.273 - IF1998). (1999 - Current Contents). ISSN 1335-0552.

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2. [1.1] KAUFHOLD, Stephan - DOHRMANN, Reiner - STUCKI, Joseph W. - ANASTACIO, Alexandre S. LAYER CHARGE DENSITY OF SMECTITES CLOSING THE GAP BETWEEN THE STRUCTURAL FORMULA METHOD AND THE ALKYL AMMONIUM METHOD. In *CLAYS AND CLAY MINERALS*, 2011, vol.59, no.2, 200., WOS

- ADDA10 MADEJOVÁ, Jana - KOMADEL, Peter - ČÍČEL, B. Infrared spectra of some Czech and Slovak smectites and their correlation with structural formulas. In *Geologica Carpathica*, 1992, vol. 1, p. 9-12.

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1. [1.2] ER-RAMLY, A. - IDER, A. Physico-Chemical And Mineralogical Characterization Of A Moroccan Bentonite (Trebia) And Determination Of Its Nature And Its Chemical Structure. In *Physical and Chemical News*, 2011, vol.61, 112-119., SCOPUS
2. [1.2] ERKOYUN, H. - KADIR, S. Mineralogy, micromorphology, geochemistry and genesis of a hydrothermal kaolinite deposit and altered Miocene host volcanites in the Hallaçlar area, Uşak, western Turkey. In *Clay Minerals*, 2011, vol.46, no.3, 421-448., SCOPUS
3. [1.2] GALAMBOŠ, M. - ROSSKOPFOVÁ, O. - KUFČÁKOVÁ, J. - RAJEC, P. Utilization of Slovak bentonites in deposition of high-level radioactive waste and spent nuclear fuel. In *Journal of Radioanalytical and Nuclear Chemistry*, 2011, vol.288, no.3, 765-777., SCOPUS

- ADDA11 MADEJOVÁ, Jana - KRAUS, I. - TUNEGA, Daniel - ŠAMAJOVÁ, E. Fourier transform infrared spectroscopic characterization of kaolinite group minerals from the main Slovak deposits. In *Geologica Carpathica C*, 1997, no. 6, p. 3-10.

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1. [1.2] VACULÍKOVÁ, L. - PLEVOVÁ, E. - VALLOVÁ, S. - KOUTNÍK, I. Characterization and differentiation of kaolinites from selected Czech deposits using infrared spectroscopy and differential thermal analysis. In *Acta Geodynamica et Geomaterialia*, 2011, vol.8, no.1, 59-67., SCOPUS

- ADDA12 NERÁD, Ivan - KOSA, Ladislav - MIKŠÍKOVÁ, Eva - ADAMKOVIČOVÁ, K. Enthalpic analysis of the CaTiSiO₅ system. In *Chemical Papers - Chemické zvesti*, 2005, vol. 60, no. 4, p. 274-278. ISSN 0366-6352.

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- ADDA13 OSACKÝ, M. - HONTY, M. - MADEJOVÁ, Jana - BAKAS, T. - ŠUCHA, V. Experimental interactions of Slovak bentonites with metallic iron. In *Geologica Carpathica*, 2009, vol. 60, no. 6, p. 535-543. (1.081 - IF2008). (2009 - Current Contents). ISSN 1335-0552.

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1. [1.1] GALAMBOS, Michal - ROSSKOPFOVA, Olga - KUFCAKOVA, Jana - RAJEC, Pavol. Utilization of Slovak bentonites in deposition of high-level radioactive waste and spent nuclear fuel. In *JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY*, 2011, vol.288, no.3, 765., WOS

- ADDA14 STRÍČEK, I. - ŠUCHA, V. - UHLÍK, P. - MADEJOVÁ, Jana - GALKO, I. Mineral stability of Fe-rich bentonite in the Mock-Up-CZ experiment. In *Geologica Carpathica*, 2009, vol. 60, no. 6, p. 431-436. (1.081 - IF2008). (2009 - Current Contents). ISSN 1335-0552.

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- ADDA15 ZIKMUND, Miroslav - PUTYERA, Karol - HRNČIAROVÁ, Klára. A novel route for the preparation of hydrotalcite and synthesis of intercalated reversible dioxygen-carrying cobalt(II) complexes. In *Chemical Papers - Chemické zvesti*, 1996, vol. 50, no. 5, p. 262-270. ISSN 0366-6352.

Citácie:

1. [1.1] ZHANG, Jianxiang - LI, Xiaohui - LOU, Liping - LI, Xiaodong - JIA, Yi - JIN, Zhe - ZHU, Yuxuan - PROKOP, A. Non-viral Gene Therapy. In *INTRACELLULAR DELIVERY: FUNDAMENTALS AND APPLICATIONS*, 2011, vol.5, no., 599., WOS

ADEB Vedecké práce v zahraničných nekarentovaných časopisoch neimpaktovaných

- ADEB01 GALUSEK, Dušan - LENČEŠ, Zoltán - ŠAJGALÍK, Pavol - RIEDEL, R. Thermal analysis study of polymer-to-ceramic conversion of organosilicon precursors. In Journal of Mining and Metallurgy B, 2008, vol. 44, p. 35-38.

Citácie:

1. [1.1] CHENG, Hongfei - YANG, Jing - FROST, Ray L. Thermogravimetric analysis-mass spectrometry (TG-MS) of selected Chinese palygorskites-Implications for structural water. In THERMOCHIMICA ACTA, 2011, vol.512, no.1-2, 202., WOS

AED Vedecké práce v domácich recenzovaných vedeckých zborníkoch (aj konferenčných), monografiách

- AED01 KRAXNER, J. - KLEMENT, R. - CHROMČÍKOVÁ, Mária - LIŠKA, Marek. The effect of CaO and MgO on physical properties of MgO-CaO-B₂O₃-Al₂O₃-SiO₂ glasses with composition close to the E-glass fibers. In 9th EDG Conference, 2008, Trenčín. - Trenčín, 2008, P. 81-84. ISBN 1022-6680.

Citácie:

1. [1.1] CORMIER, L. - CUELLO, G. J. Mg coordination in a MgSiO₃ glass using neutron diffraction coupled with isotopic substitution. In PHYSICAL REVIEW B, 2011, vol.83, no.22., WOS

Príloha D - Údaje o pedagogickej činnosti organizácie

Semestrálne prednášky:

prof. RNDr. Jozef Noga, DrSc.

Názov semestr. predmetu: Chemia kwantowa

Počet hodín za semester: 4

Názov katedry a vysokej školy: Uniwersytet Śląski Katowice, Poľsko, Instytut Chemii

Semestrálne cvičenia:

Mgr. Valéria Bizovská

Názov semestr. predmetu: Cvičenia zo všeobecnej a anorganickej chémie

Počet hodín za semester: 52

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

Mgr. Peter Boháč

Názov semestr. predmetu: Cvičenia zo všeobecnej a anorganickej chémie

Počet hodín za semester: 52

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

Mgr. Anna Brtáňová

Názov semestr. predmetu: Cvičenia zo všeobecnej a anorganickej chémie

Počet hodín za semester: 52

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

Ing. Martin Kontrík

Názov semestr. predmetu: Všeobecná a anorganická chémia (Laboratórne cvičenia)

Počet hodín za semester: 52

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

Ing. Samuel Sas

Názov semestr. predmetu: Laboratórne cvičenie z anorganickej chémie I

Počet hodín za semester: 52

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

Ing. Ľudmila Sekeráková

Názov semestr. predmetu: Laboratórne cvičenie z anorganickej chémie I

Počet hodín za semester: 52

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

Ing. Michal Šimurda

Názov semestr. predmetu: Laboratórne cvičenia z anorganickej chémie I

Počet hodín za semester: 52

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

Semináre:

Mgr. Stanislav Kedžuch, PhD.

Názov semestr. predmetu: Výpočtový seminár I

Počet hodín za semester: 48

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

Mgr. Stanislav Kedžuch, PhD.

Názov semestr. predmetu: Výpočtový seminár II

Počet hodín za semester: 24

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

doc. Ing. Zoltán Lenčéš, PhD.

Názov semestr. predmetu: Mechanical properties of engineering ceramic materials

Počet hodín za semester: 6

Názov katedry a vysokej školy: Technische Universität Darmstadt, Nemecko, Katedra disperzných tuhých látok

prof. RNDr. Jozef Noga, DrSc.

Názov semestr. predmetu: Chemia kwantowa cwiczenia

Počet hodín za semester: 6

Názov katedry a vysokej školy: Uniwersytet Śląski Katowice, Poľsko, Instytut Chemii

prof. RNDr. Jozef Noga, DrSc.

Názov semestr. predmetu: Topics in Current Chemistry

Počet hodín za semester: 24

Názov katedry a vysokej školy: Uniwersytet Śląski Katowice, Poľsko, Instytut Chemii

prof. RNDr. Pavol Šajgalík, DrSc.

Názov semestr. predmetu: Preparation of engineering ceramic materials

Počet hodín za semester: 6

Názov katedry a vysokej školy: Technische Universität Darmstadt, Nemecko, Katedra disperzných tuhých látok

Terénne cvičenia:

doc. Ing. Zoltán Lenčéš, PhD.

Názov semestr. predmetu: Odborná prax študentov na ÚACH SAV

Počet hodín za semester: 60

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

Individuálne prednášky:

doc. Ing. Zoltán Lenčéš, PhD.

Názov semestr. predmetu: Nové anorganické materiály

Počet hodín za semester: 4

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

doc. Ing. Zoltán Lenčéš, PhD.

Názov semestr. predmetu: Nové pokročilé materiály

Počet hodín za semester: 8

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

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

Krajina	D r u h d o h o d y					
	MAD, KD, VTS		Medziústavná		Ostatné	
	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní
Belgicko					Anna Prnová	39
					Jaroslav Sedláček	3
Česko	Juraj Bujdák	5			Milan Drábik	3
					Dušan Galusek	2
					Mária Chromčíková	7
					Mária Chromčíková	5
					Mária Chromčíková	7
					Mária Chromčíková	2
					Mária Chromčíková	3
					Mária Chromčíková	7
					Stanislav Kedžuch	6
					Stanislav Kedžuch	6
					Michal Korenko	2
					Zoltán Lenčes	1
					Marek Liška	7
					Ľubomír Smrčok	13
					Pavol Šajgalík	1
					Peter Šimurka	1
Čína					Michal Korenko	19
Francúzsko					Oľga Malkin	3
					Vladimír Malkin	3
					Vladimír Malkin	8
					Ľubomír Smrčok	5
Japonsko	Juraj Bujdák	18				
Kórejská republika					Pavol Šajgalík	5
Nemecko					Dušan Galusek	4
					Dagmar Galusková	35
					Ondrej Hanzel	72
					Monika Hrabalová	2
					Ismail Ibrahim	2
					Blanka Kubíková	67
					Zoltán Lenčes	4
					Oľga Malkin	6
					Oľga Malkin	6
					Vladimír Malkin	6
					Vladimír Malkin	6
					Martin Michálek	213
					Michal Vetrecin	72
Nórsko					Anežka Křístková	22
Poľsko	Jana Madejová	4			Oľga Malkin	3
	Helena Pálková	6			Vladimír Malkin	3
					Jozef Noga	13
Rakúsko					Dušan Galusek	1
					Eva Scholtzová	5
					Eva Scholtzová	5
					Eva Scholtzová	5

Rusko	Michal Korenko	32				
	Blanka Kubíková	32				
Švajčiarsko					Pavol Šajgalík	3
					Pavol Šajgalík	4
Švédsko					Monika Hrabalová	4
Taliansko					Dušan Galusek	2
Veľká Británia					Dušan Galusek	6
					Ľubomír Smrčok	6
Počet vyslaní spolu	6	97			51	735

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

Krajina	D r u h d o h o d y					
	MAD, KD, VTS		Medziústavná		Ostatné	
	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní
Česko	Demel Ondřej	12			Bolanos Castro Evelyn	7
	Hybler Jiří	7			Demel Ondřej	5
	Lang Kamil	5			Holešová Sylva	1
					Koutník Petr	1
					Petrák Milan	1
					Šamajová Vladana	6
					Valášková Marta	1
Japonsko	Suzuki Yoshikazu	14				
Poľsko	Zimowska Małgorzata	7				
Rakúsko					Atzenhofer Christina	32
					Harmuth Harald	2
					Pichlbauer Sabine	32
Rusko	Krupskaja Viktoria	7				
	Zakusin Sergej	7				
Srbsko					Maja Milošević	28
Švédsko					Langer Vratislav	5
Taliansko	Silvestroni Laura	4				
USA					Lin Hua-Tay	3
Počet prijatí spolu	8	63			13	124

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

Krajina	Názov konferencie	Meno pracovníka	Počet dní
Argentína	REHE 2012	Oľga Malkin	14
		Vladimír Malkin	14
Česko	12. Mikulášské setkání	František Šimko	2
		Valéria Bizovská	5
	6th MECC	Anna Brtáňová	5
		Juraj Bujdák	5
		Adriana Czímerová	5
		Alexander Čeklovský	5
	6th MECC	Ľuboš Jankovič	5
	6th MECC	Peter Komadel	5
		Jana Madejová	5
		Helena Pálková	5

		Samuel Sas	5
		Eva Scholtzová	4
	MSK 2013	Peter Šimurka	2
		Peter Šimurka	3
	Rozhovory o krystalografii	Ľubomír Smrčok	1
	SCČR	Miroslav Hnatko	2
	SSC 2012	Miroslav Boča	1
		Milan Drábik	5
		František Šimko	2
	XRF seminár	Alexander Čeklovský	3
		Veronika Gurišová	3
Čína	ICPNCS	Mária Chromčíková	5
Dánsko	12th SSS	Anežka Křístková	15
Francúzsko	ISNT 2012	Zoltán Lenčéš	5
		Pavol Šajgalík	5
Holandsko	11th ESG	Róbert Klement	4
	11th ESG	Jaroslav Sedláček	4
	11th ESG	Peter Šimurka	4
Kórejská republika	ISAC 2012	Zoltán Lenčéš	6
Nemecko	FUNEA Meeting	Zoltán Lenčéš	2
		Pavol Šajgalík	2
	ISCMC	Dušan Galusek	4
		Pavol Šajgalík	4
	SMNRM	Monika Hrabalová	10
		Ismail Ibrahim	10
		Zoltán Lenčéš	6
		Pavol Šajgalík	6
Poľsko	EMRS 2012	Dušan Galusek	6
		Zoltán Lenčéš	5
		Pavol Šajgalík	5
Rakúsko	CESTC 2012	Stanislav Kedžuch	4
		Jozef Noga	4
		Eva Scholtzová	4
	MM in QC	James Richard Asher	6
		Anežka Křístková	5
		Oľga Malkin	6
		Vladimír Malkin	6
Rusko	MRSI	Peter Šimurka	4
Slovinsko	PEC Meeting	Pavol Šajgalík	2
Taliansko	FORUM 2012	Pavol Šajgalík	4
Turecko	ICG	Peter Šimurka	3
	TUBITAK - SAS	Pavol Šajgalík	4
USA	49th Ann. Meeting CMS	Peter Komadel	10
	XIV ICQC	Jozef Noga	12
Veľká Británia	EUCHEM 2012	Miroslav Boča	6
		František Šimko	6
	SGTAM 2012	Mária Chromčíková	5
		Marek Liška	5
Spolu	32	60	310

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

Skratky použité v tabuľke C:

11th ESG - 11th ESG Conference
12. Mikulášské setkání - 12. Mikulášské setkání mladé generace
12th SSS - The 12th Sostrup Summer School - Quantum Chemistry and Molecular Properties
49th Ann. Meeting CMS - The 49th Annual Meeting of the Clay Minerals Society
6th MECC - 6th Mid-European Clay Conference
CESTC 2012 - Central European Symposium on Theoretical Chemistry
EMRS 2012 - European Materials Research Society 2012
EUCHEM 2012 - Conference on Molten Salts and Ionic Liquids XXIV
FORUM 2012 - FORUM 2012 of the World Academy of Ceramics - New Frontiers of Ceramics for Sustainable Society,
FUNEA Meeting - FUNEA 264873 Mid-Term Review Meeting
ICG - Zasadnutie Riadiaceho výboru ICG (International Congresses on Glass)
ICPNCS - International Conference on the Physics of Non-Crystalline Solids
ISAC 2012 - International Symposium on New Frontier of Advanced Si-Based Ceramics and Composites
ISCMC - 10th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications
ISNT 2012 - International Symposium on Nitrides 2012
MM in QC - Workshop on Modern Methods in Quantum Chemistry
MRSI - Konferencia MRSI, Zasadnutie Výkonného výboru ICG, stretnutie so zástupcami MRSI
MSK 2013 - Zasadnutie organizačného výboru Medzinárodného sklárskeho kongresu 2013
PEC Meeting - Permanent Executive Committee meeting
REHE 2012 - 10th International Conference on Relativistic Effects in Heavy-Element Chemistry and Physics 2012
Rozhovory o krystalografii - Seminár 289. Rozhovory o krystalografii
SCČR - Odborný seminár silikátovej spoločnosti Českej republiky
SGTAM 2012 - Society of Glass Technology Annual Meeting 2012 in Cambridge
SMNRM - 6th International Workshop on Spinel Nitrides and Related Materials
SSC 2012 - International Conference on Solid State Chemistry (SSC 2012)
TUBITAK - SAS - Workshop on "Research Collaboration between TUBITAK and SAS on Materials and Energy"
XIV ICQC - The XIVth International Congress of Quantum Chemistry
XRF seminár - Seminár röntgenfluorescenčnej spektrometrie