

Ústav stavebníctva a architektúry SAV



**Správa o činnosti organizácie SAV
za rok 2021**

Bratislava
január 2022

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1. Základné údaje o organizácii

1.1. Kontaktné údaje

Názov: [Ústav stavebníctva a architektúry SAV](#)
Riaditeľ: [Prof.Dr.Ing. Martin-Tchingnabé Palou](#)
Zástupca riaditeľa: [Ing. Peter Matiašovský, CSc.](#)
Vedecký tajomník: [RNDr. Ladislav Kómar, PhD.](#)
Predseda vedeckej rady: [Mgr. Miroslav Kocifaj, PhD.](#)
Členovia Snemu SAV: [Ing. Miroslav Repka, PhD.](#),
Adresa: Dúbravská cesta 9, 845 03 Bratislava 45
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Tel.: 02/ 5477 3548
E-mail: usarstav@savba.sk

Názvy a adresy organizačných zložiek a detašovaných pracovísk:

Organizačné zložky: nie sú

Detašované pracoviská: nie sú

Vedúci organizačných zložiek a detašovaných pracovísk:

Organizačné zložky: nie sú

Detašované pracoviská: nie sú

Členovia Snemu SAV za organizačné zložky:
nie sú

Typ organizácie: Príspevková od roku 1994

1.2. Údaje o zamestnancoch

Tabuľka 1a Počet a štruktúra zamestnancov

Štruktúra zamestnancov	K	K		K do 35 rokov		F	P	T	O
		M	Ž	M	Ž				
Celkový počet zamestnancov	45	29	16	6	3	42	33.55	19.18	0
Vedeckí pracovníci	22	20	2	5	0	19	16.5	15.1	0
Odborní pracovníci VŠ (výskumní a vývojoví zamestnanci ¹)	8	4	4	1	3	8	3.54	2.08	0
Odborní pracovníci VŠ (ostatní zamestnanci ²)	3	0	3	0	0	3	2.68	0	0
Odborní pracovníci ÚS	7	2	5	0	0	7	6	2	0
Ostatní pracovníci	5	3	2	0	0	5	4.83	0	0

¹ odmeňovaní podľa 553/2003 Z.z., príloha č. 5² odmeňovaní podľa 553/2003 Z.z., príloha č. 3 a č. 4

K – kmeňový stav zamestnancov v pracovnom pomere k 31.12.2021 (uvádzať zamestnancov v pracovnom pomere, vrátaneriadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí, v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zboroch)

F – fyzický stav zamestnancov k 31.12.2021 (bez riadnej materskej dovolenky, zamestnancov pôsobiacich v zahraničí v štátnych funkciách, členov Predsedníctva SAV, zamestnancov pôsobiacich v zastupiteľských zboroch)

P – celoročný priemerný prepočítaný počet zamestnancov

T – celoročný priemerný prepočítaný počet riešiteľov projektov

O – celoročný priemerný prepočítaný počet obslužného personálu podieľajúceho sa na riešení projektov (technikov, laborantov, projektových manažérov a pod.) mimo zamestnancov v administratívnej, správe a údržbe budov, upratovačiek, vodičov a pod.

M, Ž – muži, ženy

Tabuľka 1b Štruktúra vedeckých pracovníkov (kmeňový stav k 31.12.2021)

Rodová skladba	Pracovníci s hodnosťou				Vedeckí pracovníci v stupňoch		
	DrSc.	CSc./PhD.	prof.	doc.	I.	II.a.	II.b.
Muži	2	15	4	1	4	6	10
Ženy	1	1	0	0	0	1	1

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	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Muži	0	0.0	4	3.1	3	3.0	1	0.5	0	0.0	2	2.0	1	1.0	2	2.0	3	3.0
Ženy	1	0.3	0	0.0	0	0.0	1	1.0	0	0.0	1	1.0	0	0.0	0	0.0	0	0.0

A - Prepočet bez zohľadnenia úväzkov zamestnancov

B - Prepočet so zohľadnením úväzkov zamestnancov

Tabuľka 1d Priemerný vek zamestnancov organizácie k 31.12.2021

	Kmeňoví zamestnanci	Vedeckí pracovníci	Riešitelia projektov
Muži	49.6	46.8	49.1
Ženy	49.0	50.5	42.0
Spolu	49.4	47.1	48.0

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

2. Vedecká činnosť

2.1. Domáce projekty

Tabuľka 2a Domáce projekty riešené v roku 2021

ŠTRUKTÚRA PROJEKTOV	Počet		Čerpané financie (€)					
	A	B	A				B	
			Zo zdrojov SAV		Z iných zdrojov		Zo zdrojov SAV	Z iných zdrojov
			Spolu	Pre organizáciu	Spolu	Pre organizáciu		
1. Projekty VEGA	6	0	40152	34030			-	-
2. Projekty APVV	4	0	-	-	219509	200266	-	-
3. Projekty EŠIF	0	0	-	-	-	-	-	-
4. Projekty SASPRO, MoRePro	0	0	-	-	-	-	-	-
5. Iné projekty (FM EHP, Vedecko-technické projekty, na objednávku rezortov a pod.)	1	0	-	-	10490	10490	-	-

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

Tabuľka 2b Domáce projekty podané v roku 2021

Štruktúra projektov	Miesto podania	Organizácia je nositeľom projektu	Organizácia sa zmluvne podieľa na riešení projektu
1. Účasť na nových výzvach APVV r. 2021	-	3	3
2. Projekty výziev EŠIF podané r. 2021	Bratislava		
	Regióny		

2.2. Medzinárodné projekty

2.2.1. Medzinárodné projekty riešené v roku 2021

Tabuľka 2c Medzinárodné projekty riešené v roku 2021

ŠTRUKTÚRA PROJEKTOV	Počet		Čerpané financie (€)					
	A	B	A				B	
			Zo zdrojov SAV		Z iných zdrojov		Zo zdrojov SAV	Z iných zdrojov
			Spolu	Pre organizáciu	Spolu	Pre organizáciu		
1. Projekty Horizont 2020 a Horizont Európa	0	0	-	-	-	-	-	-
2. Projekty ERA.NET, ESA, JRP	0	0	-	-	-	-	-	-
3. Projekty COST	0	0	-	-	-	-	-	-
4. Projekty EUREKA, NATO, UNESCO, CERN, IAEA, IVF, ERDF a iné	0	2	-	-	-	-	-	17622
5. Projekty v rámci medzivládnych dohôd	0	0	-	-	-	-	-	-
6. Bilaterálne projekty MAD, Mobility, Open Mobility	0	0	-	-	-	-	-	-
7. Bilaterálne projekty ostatné	0	0	-	-	-	-	-	-
8. Podpora MVTs z národných zdrojov okrem SAV (APVV a iné)	0	0	-	-	-	-	-	-
9. SAS-UPJŠ ERC Visiting Fellowship Grants	0	0	-	-	-	-	-	-
10. Iné projekty	0	0	-	-	-	-	-	-

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

2.2.2. Medzinárodné projekty Horizont Európa podané v roku 2021

Tabuľka 2d Počet projektov Horizont Európa v roku 2021

	A	B
Počet podaných projektov Horizont Európa		

A - organizácia je nositeľom projektu

B - organizácia sa zmluvne podieľa na riešení projektu

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

2.2.3. Zámery na čerpanie Európskych štrukturálnych a investičných fondov v ďalších výzvach

2.3. Výber najvýznamnejších výsledkov vedeckej práce organizácie v roku 2021

Služi aj na výber výsledkov do výročnej správy SAV. Každý výsledok má byť charakterizovaný stručným, všeobecne zrozumiteľným popisom – maximálne 1000 znakov + 1 obrázok; bibliografický údaj uvádzajte rovnako ako v zozname publikačnej činnosti, vrátane IF. Nadpis by mal vystihnúť prínos a význam výsledku – podľa možnosti by nemal byť zredukovaný na názov/nadpis publikačného výstupu.

2.3.1. Výsledky na báze základného výskumu

(1) Názov výsledku: Megakonštalácie satelitov a vesmírny odpad ako nová hrozba svetelného znečistenia v globálnom meradle. (APVV-18-0014, VEGA 2/0010/20)

Riešitelia: (SAV: M. Kocifaj), (UK: F. Kunderacik), (Uni Utah: J. Barentine), (Uni Santiago de Compostela: S. Bará)

V práci publikovanej v MNRAS Letters (Nature-index) sme prišli s prelomovým zistením, že nárast počtu satelitov, trosiek a najmenších čiastočiek na obežnej dráhe Zeme sa môže podieľať na zvýšení jasú prirodzeného pozadia až o viac ako 10%, čo je limit stanovený IAU za účelom definovania podmienok pre prostredie „zamorené“ svetelným znečistením. Prekročenie tohto limitu zásadne mení doterajší charakter výskumu, nakoľko presvetlenie nočného prostredia difúznym svetlom objektov na obežnej dráhe má rozsiahly teritoriálny záber a nemožno ho eliminovať žiadnymi doteraz prijímanými opatreniami na úrovni regionálnych alebo národných autorít. Navyše, od prvého štartu satelitov SpaceX Starlink v roku 2019 hrozí, že plánované rozmiestnenie ďalších desiatok tisíc nových komunikačných satelitov spôsobí, že blízkozemský priestor bude preplnený funkčnými satelitmi a vesmírnym odpadom. Ich doposiaľ nepreskúmaný vplyv na celosvetové pozemné observačné dáta bol vôbec po prvý krát kvantifikovaný v našej práci. Očakávali sme, že príspevok vesmírnych objektov bude relatívne malý, ale získaný výsledok je alarmujúci keďže sa v nasledujúcom desaťročí očakáva až rádové zvýšenie počtu objektov na obežnej dráhe Zeme. Táto skutočnosť je o to dôležitejšia, že doterajšia komunikácia medzi vedcami, satelitnými operátormi a regulátormi úplne ignorovala príspevok vesmírnych objektov k difúznemu jasú oblohy. Keďže tieto rozhovory stále prebiehajú a odporúčania vládám o regulácii vesmírnych aktivít až po úroveň Organizácie Spojených národov čakajú na rozhodnutia, tak význam nášho zistenia nemožno podceňovať. Aj preto bola naša práca predmetom širokej diskusie v médiách (BBC, The Telegraph, The Guardian, a iné), v news rubrikách významných vedeckých časopisov (napr. Science) a v tlačových správach niektorých vedeckých spoločností (napr. Royal Astronomical Society).

KOCIFAJ, Miroslav - KUNDRACIK, F. - BARENTINE, John C. - BARÁ, Salvador. The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 504, p. L40-L44. (2020: 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slab030> (APVV-18-0014 : Globálna charakterizácia svetelného

znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry) Typ: ADCA

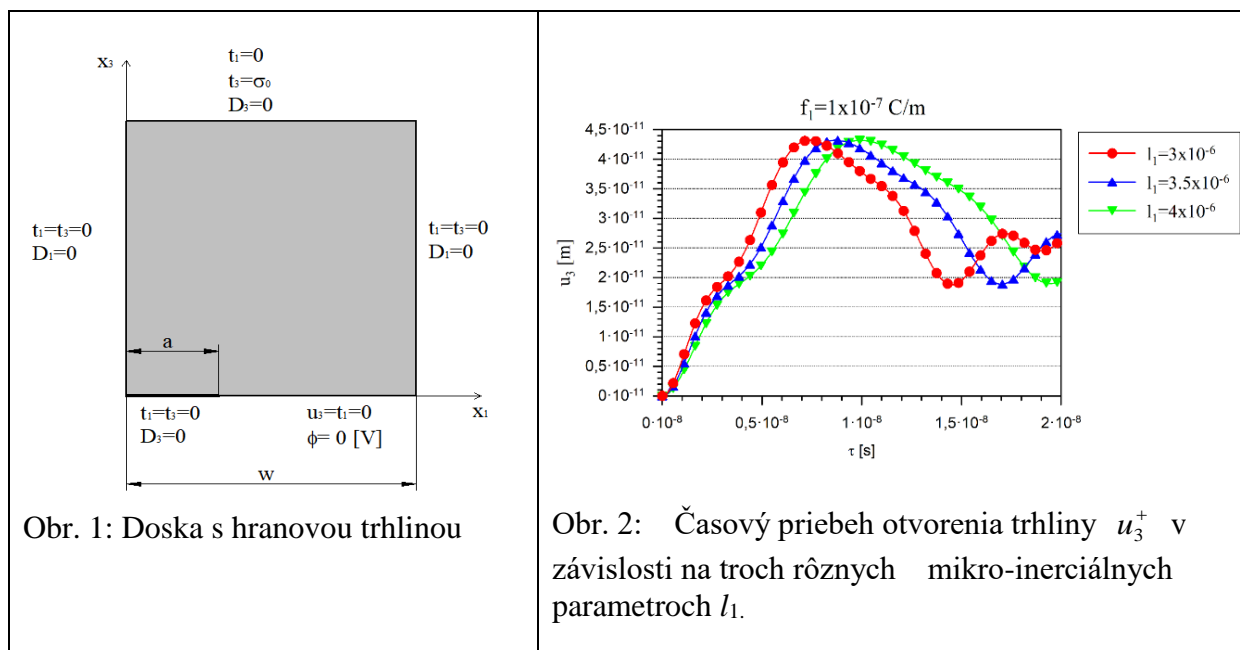


Obrázok je prebratý z news rubriky (press release o našej publikácii) z časopisu Science (<http://doi.org/10.1126/science.abi6892>)

(2) Názov výsledku: Flexoelektrický efekt v dynamicky zaťažených piezoelektrických telesách (APVV SK-CN-RD-18-0005).

Riešitelia: J. Sládek, V. Sládek, M. Repka

V miniatúrnych konštrukciách veľkosti niekoľko mikro/nano metrov bol pozorovaný takzvaný veľkostný efekt (size effect), t. j. závislosť výsledkov od veľkosti štruktúry materiálu. Tento efekt nie je možné opísať klasickou mechanikou kontinua, pretože nie je obsiahnutý v konštitutívnych rovniciach klasických teórií. Preto je potrebné používať zovšeobecnenú teóriu kontinua ako napríklad gradientnú elasticitu, ktorá tento efekt zohľadňuje. Piezoelektrické javy sa nevyskytujú v centro-symetrických materiáloch. Prítomnosť gradientov pretvorenia naruší inverznú symetriu kryštálov a indukuje polarizáciu aj v centro-symetrických kryštáloch. Avšak tento takzvaný flexoelektrický efekt sa stáva pozorovateľným len v telesách s rozmermi blízkymi charakteristickým dĺžkam mikroštruktúry materiálu. Navrhli sme pokročilé výpočtové postupy pre analýzu flexoelektrických efektov v dynamicky zaťažených piezoelektrických telesách a zistili vplyv mikro-inerciálneho parametra (micro-inertial length scale parameter) na mechanickú a elektrickú odozvu piezoelektrických konštrukčných prvkov, ako napríklad nosník alebo doska s trhlinou .



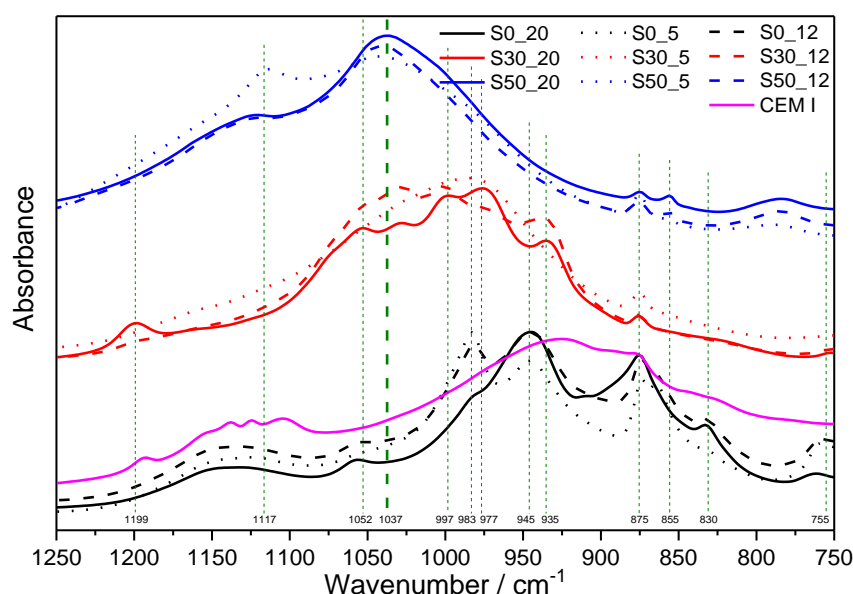
J. Sladek, V. Sladek, M. Repka, Q. Deng: Flexoelectric effect in dielectrics under a dynamic load, *Composite Structures* 260 (2021) 113528.

<https://doi.org/10.1016/j.compstruct.2020.113528>

(3) Názov výsledku: Vývoj fázového zloženia cementových materiálov za hydrotermálnych podmienok (APVV-19-0490 Výskum a vývoj mnohozložkových cementových zmesí pre špeciálne konštrukčné materiály)

Riešitelia: M. Palou, E. Kuzielová, M. Slaný, M. Žemlička

Využívané geotermálnej vody alebo geologická sekvestrácia CO_2 závisia od dobrej funkcie cementovania, ktoré je vystavené pôsobeniu vysokých teplôt a tlakov. Pre správne navrhovanie východiskových zložení cementových kompozitov sú dôležité informácie o tvorbe a stabilite nanokryštalických a kryštalických fáz, ktoré sú funkciou termodynamiky a kinetiky konkrétnych systémov. Kombinácia FTIR spektroskopie v strednej oblasti, termogravimetrickej a röntgenovej difrakčnej analýzy umožňuje detailne študovať vývoj fázového zloženia cementových kompozitov. Získali sme tak cenné poznatky o zmenách v množstve molekulárnej vody, stupni polymerizácie hydratovaných kremičitanov, alebo ich rozklade v dôsledku transformácií a kryštalizácie, ktoré prebiehajú v cementových systémoch následkom hydrotermálnych podmienok. V prípade binárnych zmesí portlandského cementu a kremičitého úletu s rôznym CaO/SiO_2 (C/S) pomerom, ktoré boli vystavené pôsobeniu teplôt od 165 °C do 220 °C a tlakom 0,5 až 2 MPa po dobu 7 dní, sme zistili nasledovné. Vplyvom hydrotermálnych podmienok sa primárne hydratačné produkty v systéme s $\text{C/S} = 3$ transformovali na kalciochondrit, katoit, hibsčit, $\alpha\text{-C}_2\text{SH}$, jaffeit, portlandit, anhydrit a kalcit. S rastúcou teplotou a tlakom sa množstvo $\alpha\text{-C}_2\text{SH}$ nemenilo, ale množstvo jaffeitu rástlo. Zníženie C/S na ~ 1 viedlo k tvorbe tepelne stabilného tobermoritu. V prípade zmesí s $\text{C/S} = 0,6$ bol identifikovaný hydrogénkremičitan vápenatý, gyrolit a cowlesit.



Obr. Segment MIR spektier 7-dňových cementových kompozitov rôzneho zloženia vystavených rôznym hydrotermálnym podmienkam.

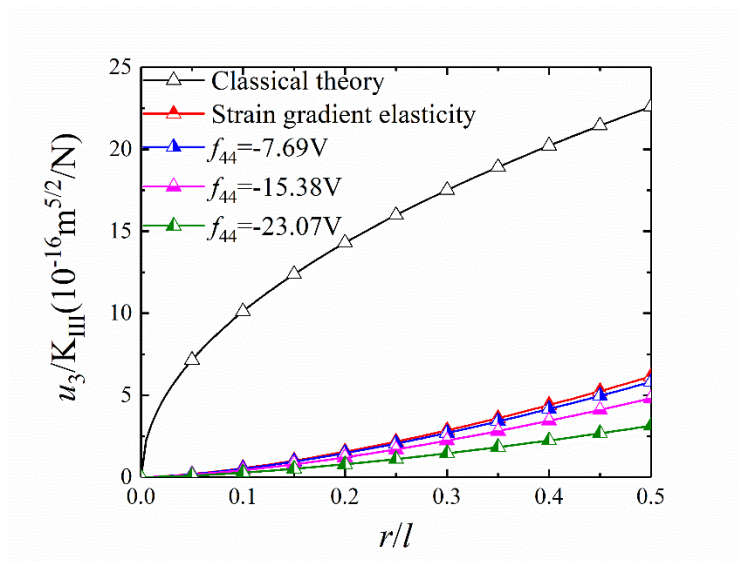
KUZIELOVÁ, Eva; SLANÝ, Michal; ŽEMLIČKA, Matúš; MÁŠILKO, Jiří; PALOU, Martin T. Phase Composition of Silica Fume-Portland Cement Systems Formed under Hydrothermal Curing Evaluated by FTIR, XRD, and TGA. In *Materials*, 2021, vol. 14, art. no. 2786. (2020: 3.623 – IF, Q1 – JCR, Typ: ADCA)

2.3.2. Výsledky aplikačného typu

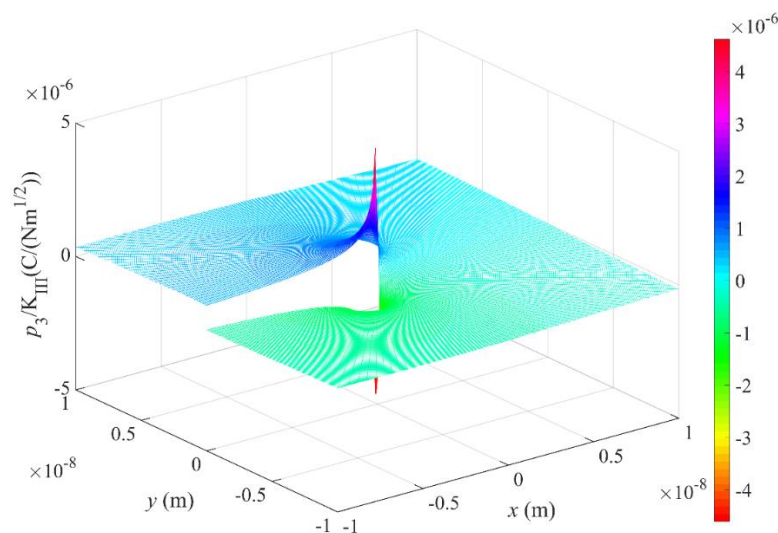
2.3.3. Výsledky na báze medzinárodnej spolupráce

(1) Projekt SK-CN-RD-18-0005, spolupráca Jiatong University in X'ian a USTARCH SAV

Monitorovanie zdravia konštrukcií (SHM) je potrebné k predchádzaniu katastrofickej deštrukcie, znižovania nákladov na údržbu a jej prevádzku. Zvlášť dôležité je to pre veľké špeciálne konštrukcie, kde ich zlyhanie môže viesť k živeľnej katastrofe so stratami životov a veľkým hmotným škodám. Doteraz sa na monitorovanie využívali senzory na princípe piezoelectricity. Piezoelektrický materiál má schopnosť transformovať mechanickú energiu na elektrickú alebo naopak. Pre silnú odozvu senzora je potrebné mať piezoelektrické materiály s veľkým piezoelektrickým koeficientom. Avšak tento koeficient je v prírodných materiáloch dosť malý a piezoelektrický efekt sa vyskytuje len v materiáloch nevykazujúcich centrosymetriu. Cesty cez kompozíciu viacerých materiálov boli iba čiastočne úspešné a podarilo sa zvýšiť piezoelektrický koeficient iba 10-20%. Preto je potrebné hľadať iné cesty so silnejšou odozvou v senzorocho. V polovici minulého storočia objavený a v súčasnosti intenzívne študovaný jav flexoelectricity sa ukazuje byť veľmi vhodný pre návrh nových senzorov využívajúcich gradient deformácií. Na rozdiel od piezoelektu vyskytuje sa vo všetkých materiáloch a koeficient transformácie mechanickej energie na elektrickú je možné zvýšiť až o stovky percent v porovnaní s klasickými piezoelektrickými materiálmi. Nový typ senzorov citlivých na gradient deformácií je vhodnejší ako klasické snímače monitorujúce priemerné hodnoty deformácií z relatívne veľkej oblasti, čo nie je postačujúce pre lokalizáciu únavových trhlin. Sensory na princípe flexoelectricity môžu merať gradient deformácií na malej lokálnej zóne v okolí koreňa únavovej trhliny. Vibrujúce časti strojov (odpadová energia) je možné v piezoelektrických materiáloch pretransformovať na elektrickú energiu. No efektívnosť transformácie závisí od piezoelektrického koeficienta, ktorý je žiaľ dosť malý. Avšak flexoelektrický efekt môže byť ďaleko efektívnejšie využitý aj pre tento účel.



Variation of the out-of-plane displacement on the upper crack surface ($\theta = \pi$) of Mode III cracks.



Space distributions of the out-of-plane electric polarization around the crack tip.

CC Publikacie v roku 2021:

- [1] X. Tian, J. Sladek, V. Sladek, Q. Deng, Q. Li: Collocation mixed finite elements for flexoelectric solids. *International Journal of Solids and Structures* 217-218 (2021) 27-39.
<https://doi.org/10.1016/j.ijsolstr.2021.01.031>
- [2] J. Sladek, V. Sladek, M. Repka, Q. Deng: Flexoelectric effect in dielectrics under a dynamic load, *Composite Structures* 260 (2021) 113528.
<https://doi.org/10.1016/j.compstruct.2020.113528>
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- [10] J. Sladek, V. Sladek, M. Repka, E. Pan: Size effect in piezoelectric semiconductor nanostructures, *Journal of Intelligent Material Systems and Structures*
<https://doi.org/10.1177/1045389X211053049>

(2) Program: Joint Research Program On Chemistry and Chemical Engineering-Visegrad Group (V4)-Korea

Pôvodná celková doba riešenia úlohy MVTS: 1. 9. 2017 – 31. 8. 2020

Celková doba riešenia úlohy MVTS po predĺžení kvôli COVID-19: 1. 9. 2017 – 31. 7. 2021

Chemické zloženie betónových kompozitov je jedným z kľúčových faktorov, ktoré výrazne ovplyvňujú starnutie betónov, a tým aj štrukturálnu integritu betónových a železobetónových konštrukcií v prostredí vystavenom jadrovému žiareniu. V rámci interdisciplinárneho projektu boli z cementu CEM I Extra 42.5 R, vysokopecnej trosky, kremičitého úletu, metakaolínu a dvoch typov ťažkého kameniva: barytu a magnetitu pripravené ťažké betóny. Vhodnosť použitia zvolených agregátov a minerálnych prímies bola overená neutrónovou aktivačnou analýzou, prompt-gama aktivačnou analýzou a röntgenovou fluorescenčnou analýzou. Zloženie ťažkých betónov bolo optimalizované na základe výsledkov chemických analýz a zrnitosti krivky. Starnutie ťažkých betónov v ionizujúcom prostredí bolo simulované numericky a experimentálne bol overený vývoj mechanických a tepelných vlastností, ktoré ovplyvňuje dlhodobé vystavenie ožiareniu.

PODHORSKÁ, Janette; PALOU, Martin T.; GMÉLING, Katalin; SZILÁGYI, Veronika; HARSÁNYI, Ildikó; SZENTMIKLÓSI, László. Experimental study of selected properties of heavyweight concrete based on analysis of chemical composition and radioactive elements of its components. In *Solid State Phenomena: 18th International Conference on Silicate Binders, ICBM 2019, 2021*, vol. 321 SSP, p. 113-118. (2020: 0.215 - SJR, Q3 - SJR). ISSN 1012-0394. Dostupné na: <https://doi.org/10.4028/www.scientific.net/SSP.321.113> Typ: ADMB

(3) Charakteristiky, meranie, a metódy odhadu žiary nočnej oblohy

Tím: IES Sky Glow Calculations Committee

Výsledkom práce našej skupiny v Sky Glow Calculations Committee (Illuminating Engineering Society) je ANSI norma IES TM-37-21, ktorá prináša postupy na výrazné zníženie antropogénnych vplyvov na presvetlenie nočnej oblohy a tiež spôsob, akým možno dosiahnuť požadované úrovne. Objasnili sme príčiny nárastu difúzneho žiarenia nočnej oblohy, možnosti kontroly a kvantifikácie potenciálnych dopadov na prostredie. Do oblasti pôsobnosti technického memoranda spadajú

prakticky všetky aplikácie súvisiace s vonkajším osvetlením, vrátane pouličného a plošného osvetlenia, športového osvetlenia, svetelných tabúl a reklám, priemyselného osvetlenia, svetla unikajúceho z interiéru komerčných a obytných budov cez okná a krajinného osvetlenia. Počiatočné kroky proaktívnej reakcie zo strany Illumination Engineering Society smerom k riešeniu celej škály problémov sú v tejto ANSI norme prezentované čo možno najkomplexnejším a najpraktickejším spôsobom. Ukázali sme, že základnými prvkami stratégie nápravy súčasného stavu presvetlenia nočnej oblohy je cielený výskum vedúci k lepšiemu pochopeniu a odhadu vplyvu spektrier, priestorového rozloženia, a charakteristík svetelných zdrojov, ako aj procesov prenosu žiarenia v zemskej atmosfére.

ASHDOWN, I. - KINZEY, Bruce - DURISCOE, D. - FALCHI, F. - GRATHER, M. - HUNG, L.W. - KOCIFAJ, Miroslav - MALBON, L. - SCHLESSELMAN, B. - TREPANOWSKI, P. - WAINSCOAT, R. - CLEAR, R. D. - WILMOTT, L. ANSI/IES TM-37-21. Technical memorandum: Description, Measurement, and Estimation of Sky Glow : An American National Standard. New York : Illuminating Engineering Society, 2021. 44 p. ISBN 978-0-87995-410-9 Typ: BGG

2.4. Publikačná činnosť (zoznam je uvedený v prílohe C)

Tabuľka 2e Štatistika vybraných kategórií publikácií

PUBLIKAČNÁ A EDIČNÁ ČINNOSŤ	Počet v r. 2021/ doplňky z r. 2020
1. Vedecké monografie a monografické štúdie vydané v domácich vydavateľstvách (AAB, ABB)	0 / 0
2. Vedecké monografie a monografické štúdie vydané v zahraničných vydavateľstvách (AAA, ABA)	0 / 0
3. Odborné monografie, vysokoškolské učebnice a učebné texty vydané v domácich vydavateľstvách (BAB, ACB, CAB)	0 / 0
4. Odborné monografie a vysokoškolské učebnice a učebné texty vydané v zahraničných vydavateľstvách (BAA, ACA, CAA)	0 / 0
5. Kapitoly vo vedeckých monografiách vydaných v domácich vydavateľstvách (ABD)	0 / 0
6. Kapitoly vo vedeckých monografiách vydaných v zahraničných vydavateľstvách (ABC)	0 / 0
7. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v domácich vydavateľstvách (BBB, ACD)	0 / 0
8. Kapitoly v odborných monografiách, vysokoškolských učebniciach a učebných textoch vydaných v zahraničných vydavateľstvách (BBA, ACC)	0 / 0
9. Vedecké práce registrované v Current Contents Connect (ADCA, ADCB, ADDA, ADDB)	32 / 0
10. Vedecké práce registrované vo Web of Science Core Collection alebo Scopus (ADMA, ADMB, ADNA, ADNB)	7 / 0
11. Vedecké práce v ostatných domácich časopisoch (ADFA, ADFB)	0 / 0
12. Vedecké práce v ostatných zahraničných časopisoch (ADEA, ADEB)	0 / 1
13. Vedecké práce v domácich recenzovaných zborníkoch (AEDA)	0 / 0
14. Vedecké práce v zahraničných recenzovaných zborníkoch (AECA)	1 / 0
15. Publikované príspevky na domácich vedeckých konferenciách (AFB, AFD)	1 / 1
16. Publikované príspevky na zahraničných vedeckých konferenciách (AFA, AFC)	4 / 1
17. Vydané periodiká evidované v CCC, WoS Core Collection, SCOPUS	0
18. Ostatné vydané periodiká	0
19. Zostavovateľské práce knižného charakteru (FAI)	0 / 0
20. Preklady vedeckých a odborných textov (EAJ)	0 / 0
21. Heslá v odborných terminologických slovníkoch a encyklopédiách (BDA, BDB)	0 / 0
22. Recenzie v časopisoch a zborníkoch (EDI)	0 / 0

Evidujú sa len tie práce zamestnancov a doktorandov, v ktorých je uvedená afiliácia k organizácii

Tabuľka 2f Štatistika vedeckých prác podľa kvartilu vedeckého časopisu

Kvartil vedeckého časopisu	Q1	Q2	Q3	Q4	Spolu
Podľa IF z r. 2020 (zdroj JCR) <i>Počet článkov / doplnky</i>	21 / 0	10 / 0	2 / 0	1 / 0	34 / 0
Podľa SJR z r. 2020 (zdroj Scimago) <i>Počet článkov / doplnky</i>	26 / 0	7 / 0	2 / 0	4 / 0	39 / 0

Tabuľka 2g Ohlasy

OHLASY	Počet v r. 2020/ doplnky z r. 2019
Citácie vo WOS (1.1, 2.1)	884 / 13
Citácie v SCOPUS (1.2, 2.2)	88 / 0
Citácie v iných citačných indexoch a databázach (9, 10, 3.2, 4.2)	0 / 0
Citácie v publikáciách neregistrovaných v citačných indexoch (3, 4, 3.1, 4.1)	1 / 0
Recenzie na práce autorov z organizácie (5, 6, 7, 8)	0 / 0

2.5. Aktívna účasť na vedeckých podujatiach

Tabuľka 2h Vedecké podujatia

Prednášky a vývesky na medzinárodných vedeckých podujatiach	18
Prednášky a vývesky na národných vedeckých podujatiach	3

2.6. Vyžiadané prednášky

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

2.6.1. Vyžiadané prednášky na medzinárodných vedeckých podujatiach

J. Sladek: The MPLG Method in Multiphysics and Scale Dependent Problems, Plenary lecture at ICCES 2020/2021, January 6-10, 2021, Phuket, Thailand

V. Sladek: Element-free discretization method with Moving Finite Element Approximation, Semi-plenary lecture at ICCES 2020/2021, January 6-10, 2021, Phuket, Thailand

L. Kómar: Light pollution quantification possibilities. International Day of Light (IDL). 24.5.2021, Día Internacional de la Luz, Nodo México, Universidad Nacional Autónoma de México.

M. Kocifaj: Fundamentals of skyglow modeling. International Day of Light (IDL). 24.5.2021, Día Internacional de la Luz, Nodo México, Universidad Nacional Autónoma de México.

J. Barentine, M. Kocifaj, F. Kundracik, S. Bará: The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. Dark and Quiet Skies for Science and Society II, Implementing the recommendations, La Palma, Canary Islands, Spain, 3-8 October, 2021

M. T. Palou: Investigation of the hydration of Dyckerhoff G-Oil Cement and its blends by Calorimetry and Thermal methods. Invited speaker at 17th International Congress on Thermal Analysis and Calorimetry (ICTAC17) including 8th Joint Czech-Hungarian-Polish-Slovakian Thermoanalytical Conference (V4 8) and 14th Conference on Calorimetry and Thermal Analysis of the Polish Society of Calorimetry and Thermal Analysis (CCTA 14) – ICTAC2020. 29 Aug. – 2 Sept. 2021, Krakow, Poland

M. T. Palou: Carbon capture, reuse and storage: Challenge for cement and construction industry. Keynote speaker at 24th In ICBMPT 2021. 24th International Conference of the Research Institute for Building Materials "Building Materials, Products and Technologies" September 29 - October 1, 2021, Telč, Czech Republic

2.6.2. Vyžiadané prednášky na národných vedeckých podujatiach

2.6.3. Vyžiadané prednášky na významných vedeckých inštitúciách

Doc. Ing. Stanislav Darula, CSc. – online prednáška na FEKT VUT Brno

2.7. Patentová a licenčná činnosť na Slovensku a v zahraničí v roku 2021

2.7.1. Vynálezy, na ktoré bol v roku 2021 udelený patent

a) na Slovensku

b) v zahraničí

2.7.2. Vynálezy prihlásené v roku 2021

a) na Slovensku

b) v iných krajinách ako prioritná prihláška

c) PCT

d) EP

e) v iných krajinách v rámci tzv. národnej fázy po PCT, resp. po validácii EP

2.7.3. Úžitkové vzory na Slovensku

a) prihlásené v roku 2021

b) udelené v roku 2021

2.7.4. Realizované vynálezy

a) predané patenty resp. prihlášky vynálezov (v prípade úplnej zmeny majiteľa patentu)

b) predané licencie (v prípade že majiteľom ostáva organizácia SAV)

Finančný prínos pre organizáciu SAV v roku 2021 a súčet za predošlé roky sa neuvádzajú, ak je zverejnenie v rozpore so zmluvou súvisiacou s realizáciou patentu.

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

Tabuľka 2i Experti hodnotiaci národné projekty

Meno pracovníka	Typ programu/projektu/výzvy	Počet hodnotených
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		projektov
Kuzielová Eva	VEGA	2

2.9. Účasť na spracovaní hesiel do encyklopédie Beliana

Počet autorov hesiel: 0

2.10. Recenzovanie knižných publikácií a príspevkov vo vedeckých časopisoch

Tabuľka 2j Počet vypracovaných recenzií na vedecké monografie, vedecké štúdie a zborníky

Meno pracovníka	Ved. monografie		Príspevky v časopisoch			Zborníky	
	Domáce	Zahra- ničné	WoS, SCOPUS	Iné databázy	Ostatné	Domáce	Zahra- ničné
Darula Stanislav	1	0	3	0	2	0	1
Hrytsyna Olha	0	0	1	0	0	0	0
Kocifaj Miroslav	0	0	24	0	0	0	0
Kómar Ladislav	0	0	9	0	0	0	0
Kuzielová Eva	0	0	8	0	0	0	0
Palou Martin-Tchingnabé	0	0	30	0	0	0	0
Petržala Jaromír	0	0	2	0	0	0	0
Sátor Ladislav	0	0	1	0	0	0	0
Sládek Ján	0	0	15	0	0	0	0
Sládek Vladimír	0	0	12	0	0	0	0
Slaný Michal	0	0	7	0	0	0	0
Spolu	1	0	112	0	2	0	1

2.11. Iné informácie k vedeckej činnosti.

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 2021

Forma	Počet k 31.12.2021				Počet doktorandov po doktorandskej skúške		Počet ukončených doktorantúr v r. 2021					
							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	M	Ž	
Denná zo zdrojov SAV	0	3	0	1	0	1	0	0	0	0	0	0
Denná z iných zdrojov	0	0	0	0	0	0	0	0	0	0	0	0
Externá	0	0	0	0	0	0	0	0	0	0	0	0
Spolu	0	3	0	1	0	1	0	0	0	0	0	0
Z toho zahraničných	0	0	0	0	0	0	0	0	0	0	0	0
Súhrn	3		1		1		0		0		0	

Uvádzajte len doktorandov organizácie ako externej vzdelávacej inštitúcie.

Riadok „Spolu“ je súčtom troch riadkov nad ním. Každá bunka v riadku „Súhrn“ vyjadruje celkový počet doktorandov (mužov a žien spolu), čiže je súčtom príslušných dvoch buniek z riadku „Spolu“. V stĺpci „Počet doktorandov po doktorandskej skúške“ sa uvádza počet doktorandov, ktorí počas roku 2021 boli aspoň 1 deň doktorandami po doktorandskej skúške. Sú číselne zahrnutí aj v predchádzajúcich stĺpcoch.

Pod predčasným ukončením rozumieme ukončenie bez obhajoby dizertačnej práce pričom doktorand neabsolvoval celú štandardnú dĺžku štúdia. Pod neúspešným ukončením rozumieme ukončenie bez úspešnej obhajoby dizertačnej práce, pričom študent absolvoval celú štandardnú dĺžku štúdia.

3.2. Zmena formy doktorandského štúdia

Tabuľka 3b Počty preradení z dennej formy na externú a z externej na dennú

Pôvodná forma	Denná z prostriedkov SAV	Denná z prostriedkov SAV	Denná z iných zdrojov	Denná z iných zdrojov	Externá	Externá
Nová forma	Denná z iných zdrojov	Externá	Denná z prostriedkov SAV	Externá	Denná z prostriedkov SAV	Denná 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 2021 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 hodnotu
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3.4. Zoznam doktorandov, ktorí ukončili doktorandské štúdium úspešnou obhajobou v nadštandardnej dĺžke štúdia

Tabuľka 3d Menný zoznam ukončených doktorandov v roku 2021 úspešnou obhajobou v nadštandardnej dĺžke štúdia

Meno doktoranda	Forma DŠ	Mesiac, rok nástupu na DŠ	Mesiac, rok obhajoby	Číslo a názov študijného odboru	Meno a organizácia školiteľa	Fakulta udeľujúca vedeckú hodnotu
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3.5. Uplatnenie absolventov doktorandského štúdia

Tabuľka 3e Prehľad uplatnenia absolventov doktorandského štúdia

Počet absolventov PhD. štúdia v roku 2021 (obhajoba leto 2021)	z toho koľkí sa zamestnali vo výskume (SAV, univerzity, rezortné výskumné ústavy)	z toho koľkí sa zamestnali v praxi mimo výskum, kde využívajú svoju kvalifikáciu	z toho koľkí sa zamestnali v praxi, kde nevyužívajú svoju kvalifikáciu	z toho koľkí boli nejaký čas nezamestnaní
0	0	0	0	0

Zoznam interných a externých doktorandov je uvedený v prílohe A.

3.6. Medzinárodné doktorandské štúdium

Tabuľka 3f Počet študentov v medzinárodných programoch doktorandského štúdia

Cotutelle	Co-direction	Iné	Zahraniční doktorandi štátne občianstvo/počet
0	0	0	

Zahraniční doktorandi sú doktorandi v dennej alebo externej forme štúdia, ktorí sú občanmi iných krajín.

Doktorandi školení v rámci Cotutelle alebo Co-direction sa do posledného stĺpca nezapočítavajú.

3.7. Zoznam študijných odborov, na ktoré má ústav uzatvorenú rámcovú dohodu, s uvedením VŠ

Tabuľka 3g Zoznam študijných odborov, na ktoré má ústav uzatvorenú rámcovú dohodu, s uvedením univerzity/vysokej školy a fakulty, kde sa doktorandský študijný program uskutočňuje

Názov študijného odboru (ŠO)	Číslo ŠO	Názov doktorandského študijného programu	Doktorandské štúdium uskutočňované na (univerzita/vysoká škola a fakulta)
Chemické technológie a inžinierstvo	2820	anorganická technológia a materiály	Fakulta chemickej a potravinárskej technológie STU
Stavebníctvo	3659	stavebníctvo	Stavebná fakulta STU
Strojárstvo	2381	aplikovaná mechanika	Strojárska fakulta STU

Názov a číslo študijného odboru vyplňte/vyberte podľa aktuálne platného zoznamu študijných odborov

<https://www.portalvs.sk/sk/studijne-odbory?from=menu1>.

Do 31. 8. 2023 študujú študenti doktorandského štúdia zaradení do študijných programov podľa zoznamu MŠVVaŠ, platného do 1. 9. 2019. Pre týchto študentov je potrebné napísať názov programu ako voľný text do stĺpca 3.

Tabuľka 3h Účasť na pedagogickom procese

Menný prehľad pracovníkov, ktorí boli menovaní do odborových komisií pre doktorandské štúdium	Menný prehľad pracovníkov, ktorí pôsobili ako členovia vedeckých rád univerzít, správnych rád univerzít a fakúlt	Menný prehľad pracovníkov, ktorí získali vyššiu vedeckú, pedagogickú hodnotu alebo vyšší kvalifikačný stupeň
doc. Ing. Stanislav Darula, CSc. (stavebníctvo)	doc. Ing. Stanislav Darula, CSc. (Stavebná fakulta TUKE)	
Ing. Peter Matiašovský, CSc. (stavebníctvo)	Ing. Peter Matiašovský, CSc. (Slovenská technická univerzita v Bratislave)	
Prof.Dr.Ing. Martin-Tchingnabé Palou (anorganická technológia a materiály)	Ing. Peter Matiašovský, CSc. (Stavebná fakulta STU)	
Prof.Dr.Ing. Martin-Tchingnabé Palou (stavebníctvo)		
Prof.Dr.Ing. Martin-Tchingnabé Palou (odbor v zahraničí)		
Prof. Ing. Ján Sládek, DrSc. (aplikovaná mechanika)		
Prof. RNDr. Vladimír Sládek, DrSc. (aplikovaná mechanika)		

Prof. RNDr. Vladimír Sládek, DrSc. (numerická analýza a vedecko-technické výpočty)		
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3.8. Údaje o pedagogickej činnosti

Tabuľka 3i Prednášky a cvičenia vedené v roku 2021

PEDAGOGICKÁ ČINNOSŤ	Prednášky		Cvičenia a semináre	
	doma	v zahraničí	doma	v zahraničí
Počet prednášateľov alebo vedúcich cvičení	4	1	0	0
Celkový počet hodín v r. 2021	114	2	0	0

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

Tabuľka 3j Aktivity pracovníkov na VŠ

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

3.9. Iné dôležité informácie k pedagogickej činnosti

4. Medzinárodná vedecká spolupráca

4.1. Medzinárodné vedecké podujatia

4.1.1. Medzinárodné vedecké podujatia, ktoré organizácia SAV organizovala v roku 2021 alebo sa na ich organizácii podieľala, s vyhodnotením vedeckého a spoločenského prínosu podujatia

Analysis of multi-field problems by advanced computational methods, Symposium organized by V. Sladek at the conference ICCES 20/21, January 6-10, 2021, Phuket, Thailand

4.1.2. Medzinárodné vedecké podujatia, ktoré usporiada organizácia SAV v roku 2022 (anglický a slovenský názov podujatia, miesto a termín konania, meno, telefónne číslo a e-mail zodpovedného pracovníka)

Central European Symposium on Building Physics 2022/Stredoeurópske sympóziu stavebnej fyziky 2022, Bratislava, SR, September 5-9.2022, P. Matiašovský, Tel.: 5930 9244, usarmat@savba.sk

LPTMM Conference 2022: Light Pollution: Theory, Modelling and Measurements 2022 (Svetelné znečistenie: teória, modelovanie a meranie 2022). Santiago de Compostela, Galicia (Spain), June 21-24 2022, M. Kocifaj, Tel: 5930 9293, miroslav.kocifaj@savba.sk

4.1.3. Počet pracovníkov v programových a organizačných výboroch medzinárodných konferencií

Tabuľka 4a Programové a organizačné výbory medzinárodných konferencií

Meno pracovníka	Programový	Organizačný	Programový i organizačný
Darula Stanislav	0	0	1
Matiašovský Peter	0	0	1
Sládek Vladimír	1	0	0
Hrytsyna Olha	1	1	0
Spolu	1	0	2

4.2. Členstvo a funkcie v medzinárodných orgánoch

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

doc. Ing. Stanislav Darula, CSc.

CIE - Commission Internationale de l'Eclairage (funkcia: Reprezentant SR v CIE Divízii 3)
TC 3-54: Revision of CIE 16-1970: Daylight (funkcia: člen)

Mgr. Miroslav Kocifaj, PhD.

International Astronomical Union (funkcia: člen)
International Solar Energy Society (ISES) (funkcia: člen {silver member})
Optical Society of America (OSA) (funkcia: člen)
The Illuminating Engineering Society (funkcia: člen Sky Glow Committee)

Prof.Dr.Ing. Martin-Tchingnabé Palou

ICIC International Committee for Irradiated Concrete (funkcia: člen)

Prof. Ing. Ján Sládek, DrSc.

Central European Assoc. for Computational Mechanics (funkcia: člen)

Int. Soc. Comput. Eng. & Sciences (ICCES) (funkcia: člen)

Prof. RNDr. Vladimír Sládek, DrSc.

Central European Assoc. for Computational Mechanics (funkcia: člen)

International Society for Boundary Elements (funkcia: člen)

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

Tabuľka 4b Experti hodnotiaci medzinárodné projekty

Meno pracovníka	Typ programu/projektu/výzvy	Počet hodnotených projektov
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4.4. Najvýznamnejšie prínosy MVTS ústavu vyplývajúce z mobility a riešenia medzinárodných projektov a iné informácie k medzinárodnej vedeckej spolupráci

Program: Joint Research Program On Chemistry and Chemical Engineering-Visegrad Group (V4)-Korea

1. Projekt Visegrad Group (V4)-Korea, V4-KOREA_RADCON umožnil vytvoriť kontakt s univerzitou Yonsei v Soule, čo viedlo k získaniu projektu APVV: SK-KR-18-0006 (Materiálové zloženie a mechanické vlastnosti ťažkého a samozhutňujúceho sa betónu) v rámci verejnej výzvy SK-KR 2018 na podávanie žiadostí na riešenie spoločných projektov podporujúcich spoluprácu medzi organizáciami v Slovenskej republike a v Kórejskej republike.
2. VISEGRAD GROUP (V4): Česká republika, Maďarsko, Poľsko a Slovenská republika vytvorili silnú pracovnú skupinu počas riešenia projektu V4-KOREA_RADCON a preto mohli podať žiadosť v rámci výzvy „VISEGRAD GROUP (V4) - JAPAN JOINT RESEARCH PROGRAM ON ADVANCED MATERIALS“ na riešenie projektu „Advanced Material Engineering for Extension of Service Life of Concrete Anchors Exposed to Vibration and High Temperatures in New and Aging Critical Infrastructure“ (project acronym: V4-JAPAN_AnchorAge).
3. Od roku 2018 je vytvorená vlastná webová stránka (www.geomat.sav.sk), ktorá slúži na zverejňovanie a propagovanie výsledkov projektu. Stránka je dostupná aj cez internú linku SAV a informácie na nej zverejnené sú pravidelne aktualizované.

*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. Koncepcia dlhodobého rozvoja organizácie

5.1. Odporúčania z posledného pravidelného hodnotenia organizácií SAV (akreditácie)

Komisia medzinárodného panelu nás zaradila do kategórie C s nasledujúcim vysvetlením:

- Bez dôrazného vývoja v strategickom plánovaní a riadení je ťažké pochopiť ako ústav (v jeho štruktúre) môže byť považovaný za udržateľný.
- Opísaná činnosť ústavu je skôr vedeckým výskumom, než skutočne súvisiaca so stavebníctvom.
- Musia byť zlepšené procesy identifikujúce línie výskumu, vrátane autoritatívneho vonkajšieho poradenstva.
- Ústav by mal viac hľadiť navonok, v zmysle jeho väzieb na stavebný priemysel a jeho viditeľnosť pri interakcii s medzinárodnou výskumnou komunitou v relevantných tematických oblastiach.
- Ak je daná jasná stratégia, tá by mala priťahovať viac PhD študentov, ako aj podnecovať súčasných zamestnancov k spolupráci s univerzitami, s cieľom zabezpečiť viac kandidátov na doktorát, prinášajúc viac vitálnosti.
- Zamestnanci by mali stále hľadať cesty po ktorých by ich výskum mohol viesť mimo produkciu článkov.

Také hodnotenie nemohlo byť uspokojivé a preto Ústav robí maximum, aby zlepšil tento stav pomocou plnenia „Akčného plánu“.

5.2. Hlavné body Akčného plánu organizácie a stav ich plnenia

Ústav sa od 1.1.2022 stal „verejnou výskumnou inštitúciou“ v rámci transformácie Slovenskej akadémie vied. V nasledujúcich bodoch sú zhrnuté opatrenia vyplývajúce z Akčného plánu ktoré priamo reagujú na odporúčania medzinárodného panelu z poslednej akreditácie.

- *Bez dôrazného vývoja v strategickom plánovaní a riadení je ťažké pochopiť ako ústav (v jeho štruktúre) môže byť považovaný za udržateľný.*

Akčný plán je založený na skutočnosti, že organizácia je v prvom rade pracoviskom základného výskumu, ale bude taktiež orientovať svoje aktivity do oblasti aplikovaného výskumu s cieľom nájsť uplatnenie vo vývojovej sfére. Takým spôsobom môže Ústav úspešne realizovať transfer vedomostí do praxe. Organizačná štruktúra Ústavu je výsledkom vývoja daného špecifickými potrebami stavebného výskumu ako celku, konkrétne v oblasti aplikovanej mechaniky, stavebnej fyziky a materiálového inžinierstva.

- *Opísaná činnosť ústavu je skôr vedeckým výskumom, než skutočne súvisiaca so stavebníctvom.*

Toto konštatovanie je úzko spojené s názvom Ústavu, ktorý sa navonok skôr javí ako rezortný výskumný ústav než ako vedecký. Jeho hlavnými tematickými zameraniami vyplývajúcimi zo zakladacej listiny sú: stavebné inžinierstvo, aplikovaná mechanika, náuka o nekovových materiáloch a stavebných hmotách a optika. Ústav je pritom vedeckým pracoviskom so slobodou bádania s vysokou mierou interdisciplinaritou, zdôrazňovanou aj riadiacimi orgánmi SAV. Preto nie je tematicky striktno obmedzený a výskum sa zameriava na progresívne témy, ktoré sú ťažiskové v celosvetovom meradle. Dosiahnuté výsledky sú používané v aplikovanom výskume, ako aj v praxi a výrazne zvyšujú kredit ústavu a zviditeľňujú jeho postavenie v rámci vedeckých a výskumných pracovísk.

- *Musia byť zlepšené procesy identifikujúce línie výskumu, vrátane autoritatívneho vonkajšieho poradenstva.*

Ústav je pracoviskom základného výskumu so širokým spektrom medzinárodných spoluprác postavených práve na platforme vedeckého bádania. Ústav bol alebo je zapojený do projektov medzinárodného charakteru:

- MVTs (MVTs - Visegrad Group (V4)-Korea Joint Research Program On Chemistry and Chemical Engineering),
- SK-CN-RD-18-0005 : Multiškálová flexoelektrická teória a nová metóda na detekciu mikrotrhlín v dielektrikách v reálnom čase,
- SK-KR-18-0006 : Materiálové zloženie a mechanické vlastnosti ťažkého a samozhutňujúceho sa betónu.

Zapojenie sa do výskumných projektov a publikovanie výsledkov v impaktovaných časopisoch po recenzii medzinárodnými expertami sú všetkými vedeckými autoritami považované za jednoznačne reprezentatívny ukazovateľ kvality realizovaného výskumu a jeho užitočnosti. Ústav v roku 2021 podal žiadosť v rámci MVTs V4-Japan a 1 európsky projekt Research Fund for Coal and Steel (RFCS) METHAGEO.

Členmi Medzinárodného poradného výboru Ústavu stavebníctva a architektúry SAV sú:

- doc. Zoltán Kolláth, DSc., Eotvos Loránd University, Szombathely,
- prof. Ing. Robert Černý, DrSc., České vysoké učení technické v Praze,
- Dr. Arnon Chaipanich, Ass. prof., Chiang Mai University.

Akčný plán ústavu je nástrojom realizácie strategických cieľov ústavu, ktorými sú progresívne témy výskumu realizované na jednotlivých oddeleniach:

- Oddelenie aplikovanej mechaniky:
Vývoj pokročilých multiškálových kontinuálnych matematicko-fyzikálnych modelov, potrebných pre popis kompozitov s nanokonštituentmi, modelovanie pokročilých štruktúr termoelektrických materiálov, teória flexoelektricity a nové metódy pre detekciu mikrotrhlín v reálnom čase v dielektrických materiáloch.
 - Oddelenie materiálov a konštrukcií:
Vývoj pokročilých anorganických spojív založených na mnohozložkových cementoch obsahujúcich prímеси, geopolymérov a fosfátových keramických spojív, vysokohodnotných betónových konštrukcií. Štúdium kinetiky a mechanizmu hydratácie a vymedzovanie oblasti termodynamických rovnováh za normálnych a hydrotermálnych podmienok.
 - Oddelenie optiky a termofyziky:
Výskum mechanizmu, akým kumulatívne svetelné emisie z mnohých zdrojov ovplyvňujú jas nočnej oblohy, difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry a charakterizácia svetelného znečistenia predstavujú inovatívne témy v stavebnej fyzike a urbanizme, inovatívne riešenia tepelnej regulácie povrchových vrstiev netransparentných vonkajších konštrukcií budov.
- *Ústav by mal viac hľadiť navonok, v zmysle jeho väzieb na stavebný priemysel a jeho viditeľnosť pri interakcii s medzinárodnou výskumnou komunitou v relevantných tematických oblastiach.*

Ústav stavebníctva a architektúry dlhodobo spoluorganizuje s Výskumným ústavom stavebných hmôt v Brne (ČR) seminár „Kvalita cementu“ pre manažérov kvality českých a slovenských cementární. Špičkoví vedeckí pracovníci sa pravidelne zúčastňujú na medzinárodných podujatiach a pôsobia v rôznych medzinárodných vedeckých výboroch:

- International Astronomical Union
- International Solar Energy Society (ISES)
- Optical Society of America (OSA)
- The Illuminating Engineering Society

- ICIC International Committee for Irradiated Concrete
- Central European Assoc. for Computational Mechanics
- International Society for Boundary Elements a pod.

V rámci internacionalizácie naši vedci úzko spolupracujú s mnohými zahraničnými pracoviskami

- Catedras CONACYT, Mexiko
- University Cégep de Sherbrooke, Kanada
- University of Vienna, Rakúsko
- US Army Research Lab, USA,
- Naresuan University, Thailand.
- School of Aerospace, Xi'an Jiaotong University, Xi'an, China
- National Academy of Sciences of Ukraine,
- Czech Technical University in Prague/Faculty of Civil Engineering
- Centre for Energy Research, Hungarian Academy of Sciences
- Institute of Fundamental Technological Research, Polish Academy of Sciences (IPPT PAN)
- Yonsei University, KR
- VUT Brno, ČR
- Výzkumný ústav stavebních hmot, Brno, ČR

Naši tvoriví pracovníci publikujú v spolupráci so zahraničnými vedcami práce v renomovaných zahraničných periodikách. Cieľom vedenia ústavu je preto plná podpora kvalitných publikačných výstupov s prihliadnutím na impakt faktor daného periodika a zaradenie do kvartilu s najvyšším hodnotením (Q1). Z 32 CC publikácií má ústav tento rok 19 v Q1 (59 %), 10 v Q2 (31 %), 2 v Q3 (6 %) a 1 v Q4 (3 %). Teda asi 90% všetkých publikácií je v top časopisoch.

Ústav sa zapojil do organizovania medzinárodných konferencií (Thermophysics 2021, Brno ČR a Analysis of multi-field problems by advanced computational methods, Phuket, Thailand).

Bola podpísaná dohoda o spolupráci s Prydniprovsk State Academy of Civil Engineering and Architecture.

Žiadatelia z ústavu sú v získavaní národných projektov dlhodobo úspešní. Boli podané 3 žiadosti v rámci výzvy APVV SR-CN a SR-RF, 2 spoločné so SvF STU a jeden s TSÚS v rámci APVV-2021.

Nezaostáva ani popularizácia, kde tvoriví pracovníci ústavu priebežne popularizujú výsledky svojho výskumu formou článkov v populárno-vedeckých periodikách (napr. Quark) a v článkoch na internete. V hodnotenom období bola zintenzívnená popularizácia ústavu a jeho výsledkov najmä formou profilu na sociálnych sieťach Facebook a Instagram, pružnejšej aktualizácie webovej stránky ústavu, aktívneho zapojenia sa do Týždňa vedy a techniky a v prezentácii vedeckých kapacít v masmédiách.

Dve práce vo vedeckých časopisoch registrovaných v databáze Nature Index kolektívu okolo Mgr. Kocifaja boli ocenené Predsedníctvom SAV v roku 2021.

Bolo dosiahnuté zvýšenie rovnomernosti rozdelenia kvality výsledkov vedeckých pracovníkov, individuálne i medzi oddeleniami.

Bolo aktualizované zloženie Vedeckej rady ústavu.

V hodnotenom roku bol preradený ďalší vedecký pracovník do kvalifikačného stupňa IIa. Jeden pracovník obhájil DrSc. prácu.

Boli prijatí noví vedeckí pracovníci s PhD. a predpokladá sa prijatie vysokokvalifikovaného vedeckého pracovníka v rámci programu SASPRO.

Naša politika rodovej rovnosti sa prejavila vymenovaním Ing. Kuzielovej, PhD. za vedúcu Oddelenia materiálov a konštrukcií.

Viacerí mladí pracovníci sú zapojení do aktivít v ústavných poradných orgánoch, v komisii VEGA a v technických komisiách.

- *Ak je daná jasná stratégia, tá by mala priťahovať viac PhD študentov, ako aj podnecovať súčasných zamestnancov k spolupráci s univerzitami, s cieľom zabezpečiť viac kandidátov na doktorát, prinášajúc viac vitálnosti.*

Pre skvalitnenie doktorandského štúdia bol analyzovaný súčasný stav a využívanie aktuálnych možností. Boli rozšírené študijné programy a ponúknutých 9 tém dizertačných prác. Pravidelné hodnotenie doktorandov prebieha na základe vnútorného systému kvality doktorandského štúdia, v súlade so študijnými plánmi. V súčasnosti má ústav 3 doktorandky. Ústav má dvoch garantov doktorandského štúdia v programoch: strojárstvo, stavebníctvo, anorganická technológia a materiály. V nasledujúcom roku by mal pribudnúť ďalší garant, ktorý v roku 2021 obhájil titul DrSc.

- *Zamestnanci by mali stále hľadať cesty po ktorých by ich výskum mohol viesť mimo produkciu článkov.*

Od 1. októbra minulého roku je vo funkcii nový riaditeľ, ktorý si dal predsavzatie úspešne dokončiť proces transformácie a hľadať nové impulzy a vzťahy na spoluprácu v oblasti vedy a výskumu, ako aj v oblasti výskumu a vývoja. Je naďalej otvorená téma integrácie ústavu s inými technickými ústavmi SAV. Jeho prioritou je tiež efektívne využívanie laboratórií v rámci vedeckých projektov. Špecializované prístrojové vybavenie je prístupné partnerským organizáciám SAV a univerzitám, ako aj pre využitie v praxi.

Vedenie a vedecká rada ústavu kontrolujú plnenie akčného plánu priebežne a o výsledkoch práce ústavu sú zamestnanci každoročne informovaní na výročných schôdzach ústavu.

5.3. Aktualizácia Akčného plánu organizácie v roku 2022.

V rámci Akčného plánu sa ústav v najbližšom roku sústreďí na:

- dobudovanie štruktúr „verejnej výskumnej inštitúcie,,
- hľadanie konsenzu v zmene názvu ústavu
- zapojenie sa do programov SASPRO a IMPULZ na získanie vysoko kvalifikovaných domácich i zahraničných vedeckých pracovníkov
- získanie doktorandov a post-doktorandov zo zahraničia v rámci európskych programov, ako aj v rámci poskytovania štipendií vlády Slovenskej republiky pre zahraničných študentov
- hľadanie riešení pre predaj licencií/patentov v réžii ústavu
- priebežnú aktualizáciu kritérií hodnotenia tvorivých pracovníkov v súlade s kritériami výkonového financovania vedeckých pracovísk SAV
- aktualizovanie dizajnu a obsahu webovej stránky ústavu
- vypracovanie kompaktných verzií výročných správ ústavu v anglickom jazyku
- propagáciu výsledkov a špičkových pracovníkov na sociálnych sieťach vedeckého (ResearchGate, Academia.edu) aj nevedeckého charakteru (Facebook, Instagram)
- organizovanie medzinárodnej konferencie 5th Central European Symposium on Building Physics 2022

6. Spolupráca s univerzitami/vysokými školami a inými subjektmi v oblasti vedy a techniky, okrem aktivít uvedených v kap. 2, 3, 4

6.1. Spoločné pracoviská organizácie

6.1.1. Spolupráca s univerzitami/VŠ (fakultami)

Pozn.: uvádzajte len tie spolupráce, na ktoré má organizácia zmluvu resp. memorandum o zriadení spoločného pracoviska, resp. o vzájomnej spolupráci v konkrétnej oblasti výskumu

6.1.2. Spoločné pracoviská s inými organizáciami SAV

Pozn.: uvádzajte len tie spolupráce, na ktoré má organizácia zmluvu resp. memorandum o zriadení spoločného pracoviska, resp. o vzájomnej spolupráci v konkrétnej oblasti výskumu

6.2. Spoločné pracoviská organizácie s inými inštitúciami mimo SAV a VŠ

Pozn.: uvádzajte len tie spolupráce, na ktoré má organizácia zmluvu resp. memorandum o zriadení spoločného pracoviska, resp. o vzájomnej spolupráci v konkrétnej oblasti výskumu

6.3. Spoločné projekty s univerzitami a ostatnými inštitúciami mimo SAV

Názov projektu: Globálna charakterizácia svetelného znečistenia

Agentúra a číslo projektu: APVV-18-0014

Spolupracujúce inštitúcie: Fakulta matematiky, fyziky a informatiky UK

Koordinátor projektu: Miroslav Kocifaj

Obdobie riešenia: 1.7.2019-30.6.2023

Názov projektu: Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry

Agentúra a číslo projektu: VEGA 2/0010/20

Spolupracujúce inštitúcie: Fakulta matematiky, fyziky a informatiky UK

Koordinátor projektu: Miroslav Kocifaj

Obdobie riešenia: 1.1.2020-31.12.2023

Názov projektu: Výskum priamej zložky dennej osvetlenosti v architektonickom a interiérovom prostredí

Agentúra a číslo projektu: VEGA 2/0017/20

Spolupracujúce inštitúcie: SvF TU Košice

Koordinátor projektu: Stanislav Darula

Obdobie riešenia: 1. 1. 2020 – 31. 12. 2022

Názov projektu: Štúdium degradácie viaczložkových cementových materiálov v dôsledku uhličitej korózie v podmienkach simulujúcich geotermálne vrty

Agentúra a číslo projektu: VEGA 2/0032/21

Spolupracujúce inštitúcie: FCHPT STU, Bratislava

Koordinátor projektu: Eva Kuzielová

Obdobie riešenia: 1. 1. 2021 – 31. 12. 2024

6.4. Iné typy spoločných aktivít s inštitúciami mimo SAV

Ministerstvo obrany Slovenskej republiky: Nežiadúci a cielený rezonančný útlm mikrovlnných komunikačných liniek

Kód projektu: SEMOD-74-2/2019

Koordinátor projektu: Miroslav Kocifaj

Obdobie riešenia: 1.4.2019-30.6.2021

7. Aplikácia výsledkov výskumu v spoločenskej a hospodárskej praxi

7.1. Výsledky výskumu organizácie aplikované v spoločenskej a hospodárskej praxi

7.2. Kontraktový – zmluvný výskum (vrátane zahraničných kontraktov)

Názov: Charakterizácia pórovej štruktúry ortuťovou porozimetriou
Odoberateľ: RHP-Technology GmbH, Seibersdorf 2444, FN352783z
Finančný prínos: 2400 eur

Názov: Charakterizácia pórovej štruktúry cementových kompozitov ortuťou
Odoberateľ: Technický a skúšobný ústav stavebný, n. o
Finančný prínos: 3000 eur

Názov: Charakterizácia pórovej štruktúry hornín ortuťovou porozimetriou
Odoberateľ: Prírodovedecká fakulta Univerzity Komenského v Bratislave
Finančný prínos: 300 eur

7.3. Iné formy aplikácie výsledkov výskumu v spoločenskej a hospodárskej praxi

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

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

Názov expertízy: TK 108 Svetlo a osvetlenie

Adresát expertízy: Úrad pre normalizáciu, metrológiu a skúšobníctvo SR

Stručný opis: predseda komisie, expertízna a normalizačno technická činnosť

Názov expertízy: PS 714 Revízia STN 73 4301

Adresát expertízy: Budovy na bývanie pri ÚNMS SR

Stručný opis: expertízna a normalizačno technická činnosť

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

Tabuľka 9a Súhrnné počty vedecko-popularizačných činností organizácie SAV

Typ	Počet	Typ	Počet	Typ	Počet
prednášky/besedy	5	tlač	2	TV	1
rozhlas	3	internet	17	exkurzie	1
publikácie	0	multimediálne nosiče	0	dokumentárne filmy	0
iné	0				

9.2. Vedecko-organizačná činnosť

Tabuľka 9b Vedecko-organizačná činnosť

Názov podujatia	Domáca/ medzinárodná	Miesto	Dátum konania	Počet účastníkov
-----------------	-------------------------	--------	---------------	---------------------

9.3. Účasť na výstavách

9.4. Účasť v programových a organizačných výboroch národných konferencií

Tabuľka 9c Programové a organizačné výbory národných konferencií

Meno pracovníka	Programový	Organizačný	Programový i organizačný
Spolu			

9.5. Členstvo v redakčných radách časopisov

doc. Ing. Stanislav Darula, CSc.

Light and Engineering (funkcia: člen redakčnej rady)

Lighting Research and Technology (funkcia: člen redakčnej rady)

VTs News (funkcia: člen redakčnej rady)

Mgr. Olha Hrytsyna, DrSc.

Physico-Mathematical Modelling and Informational Technologies (funkcia: členka redakčnej rady)

Mgr. Miroslav Kocifaj, PhD.

Journal of Quantitative Spectroscopy & Radiative Transfer (funkcia: Guest Editor)

Remote Sensing (funkcia: Editor { Atmosphere & Urban remote sensing })

Prof.Dr.Ing. Martin-Tchingnabé Palou

Ceramics-Silikaty (funkcia: Editorial Board)

Journal of Thermal Analysis and Calorimetry (funkcia: Editorial Board)

Prof. Ing. Ján Sládek, DrSc.

Electronic Jour. Boundary Elements (funkcia: člen)
Jour. Computational and Applied Mechanics (funkcia: člen)
Journal of Multiscale Modelling (funkcia: člen)
SDHM-Structural Durability and Health Monitoring Journal (funkcia: člen)

Prof. RNDr. Vladimír Sládek, DrSc.

Communications in Numerical Analysis (funkcia: člen redakčnej rady)
Composites Part C (funkcia: člen redakčnej rady)
Int. Jour. Engineering Analysis with Boundary Elements (funkcia: Editor)
Journal of Industrial Mathematics and Computational Mechanics (funkcia: člen redakčnej rady)
Newsletter of the Int. Soc. of Boundary Element Methods (funkcia: člen redakčnej rady)
Series Advances in Boundary Elements (funkcia: člen edičnej rady)

9.6. Činnosť v domácich vedeckých spoločnostiach

doc. Ing. Stanislav Darula, CSc.

SNK CIE (funkcia: člen predsedníctva, vedecký tajomník)
SSTP - Slovenská spoločnosť pre techniku prostredia (funkcia: člen)
SSTS-Slovenská svetlotechnická spoločnosť (funkcia: člen predsedníctva)
ZSVTS (funkcia: člen Rady)

Mgr. Miroslav Kocifaj, PhD.

CIE Div5, TC 5-28 (funkcia: člen)
Slovenská astronómická spoločnosť (funkcia: člen)

Ing. Peter Matiašovský, CSc.

Slovenská bioklimatologická spoločnosť pri SAV (funkcia: člen)
Slovenská fyzikálna spoločnosť pri SAV (funkcia: člen)
Slovenská spoločnosť pre techniku prostredia (funkcia: člen)
Zväz slovenských vedeckotechnických spoločností (funkcia: Auditor EUR-ACE akreditačného centra ZSVTS)

Prof.Dr.Ing. Martin-Tchingnabé Palou

CO-SM Qualiform s.r.o. (funkcia: člen)
Technická normalizácia ÚNMS , TK40 (funkcia: Predseda komisie)

Ing. Ladislav Sátor, PhD.

Slovenská spoločnosť pre mechaniku (funkcia: člen)

Prof. Ing. Ján Sládek, DrSc.

Slovenska spoločnosť pre mechaniku (funkcia: člen)

Prof. RNDr. Vladimír Sládek, DrSc.

Slovenská spoločnosť pre mechaniku (funkcia: člen hlav. výboru)

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

10. Činnosť knižnično-informačného pracoviska

10.1. Knižničný fond

Tabuľka 10a Knižničný fond

Knižničné jednotky spolu		89732
z toho	knihy a zviazané periodiká	79920
	audiovizuálne dokumenty	
	elektronické dokumenty (vrátane digitálnych)	
	mikroformy	
	iné špeciálne dokumenty - dizertácie, výskumné správy	10185
	Rukopisy, vzácne tlače	
Počet titulov dochádzajúcich periodík		2
z toho zahraničné periodiká		2
Ročný prírastok knižničných jednotiek		6
v tom	kúpou	6
	darom	
	výmenou	
	bezodplatným prevodom	
	náhradou	
Úbytky knižničných jednotiek		
Knižničné jednotky spracované automatizovane		

Výraz „v tom“ označuje úplné (vyčerpávajúce) údaje, ktorých súčet sa musí rovnať údaju v riadku „spolu“, čiže nadradenému riadku.

Výraz „z toho“ označuje neúplné (výberové) údaje, ktorých súčet sa nemusí rovnať údaju v riadku „spolu“.

10.2. Výpožičky a služby

Tabuľka 10b Výpožičky a služby

Výpožičky spolu (riadok 1)		62
v tom z r. 1	prezenčné výpožičky	10
	absenčné výpožičky	52
v tom z r. 1	odborná literatúra pre dospelých	54
	výpožičky periodík	8
MVS iným knižniciam		2
MVS z iných knižníc		9
MMVS iným knižniciam		
MMVS z iných knižníc		
Počet vypracovaných bibliografií		
Počet vypracovaných rešerší		1

10.3. Používatelia

Tabuľka 10c Používatelia

Registrovaní používatelia	41
Návštevníci knižnice spolu (bez návštevníkov podujatí)	48

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 €	664,97

10.5. Iné informácie o knižničnej činnosti

11. Aktivity v orgánoch SAV

11.1. Členstvo vo Výbore Snemu SAV

11.2. Členstvo v Predsedníctve SAV a vo Vedeckej rade SAV

11.3. Členstvo v komisiách SAV

Prof. Ing. Ján Sládek, DrSc.

- Komisia SAV pre posudzovanie vedeckej kvalifikácie zamestnancov (člen)

11.4. Členstvo v orgánoch VEGA

prof. Vladimír Sládek, DrSc.

- komisia č. 6 pre stavebné inžinierstvo (stavebníctvo, dopravu a geodéziu) a environmentálne inžinierstvo vrátane baníctva, hutníctva a vodohospodárskych vied (člen)

Mgr. Miroslav Kocifaj, PhD.

- komisia č. 6 pre stavebné inžinierstvo (stavebníctvo, dopravu a geodéziu) a environmentálne inžinierstvo vrátane baníctva, hutníctva a vodohospodárskych vied (člen)

RNDr. Ladislav Kómar, PhD.

- komisia č. 6 pre stavebné inžinierstvo (stavebníctvo, dopravu a geodéziu) a environmentálne inžinierstvo vrátane baníctva, hutníctva a vodohospodárskych vied (člen)

Ing. Eva Kuzielová, PhD.

- komisia č. 6 pre stavebné inžinierstvo (stavebníctvo, dopravu a geodéziu) a environmentálne inžinierstvo vrátane baníctva, hutníctva a vodohospodárskych vied (člen)

Ing. Miroslav Repka, PhD.

- komisia č. 6 pre stavebné inžinierstvo (stavebníctvo, dopravu a geodéziu) a environmentálne inžinierstvo vrátane baníctva, hutníctva a vodohospodárskych vied (člen)

12. Hospodárenie organizácie

12.1. Výdavky organizácie

Tabuľka 12a Výdavky organizácie (skutočnosť k 31. 12. 2021 v €)

Typ organizácie (RO,PO)		Zdroje, z ktorých sa kryli jednotlivé výdavky			
Výdavky	Spolu	kapitola SAV (111)	iné štátne a verejné zdroje	ostatné zdroje	% krytia z kapitoly SAV
1. Bežné výdavky	1 299 967	984 212	231 635	84 120	75,7
z toho: mzdy (610)	813 300	701 763	110 535	1 002	86,3
vedecká výchova štipendiá (640)	17 923	17 923	0	0	100
poistné a príspevok do poisťovní (620)	256 801	197 920	39 547	19 334	77,1
tovary a služby (630)	191 393	66 606	62 631	62 156	34,8
transfery partnerom projektov (640)	18 922	0	18 922	0	0
2. Kapitálové výdavky	16 665	6 250	0	10 415	37,5
z toho: obstarávanie kapitálových aktív	16 665	6 250	0	10 415	37,5
kapitálové transfery	0	0	0	0	0

12.2. Zdroje financovania organizácie

Tabuľka 12b Zdroje financovania organizácie (skutočnosť k 31. 12. 2021 v €)

Typ organizácie (RO,PO)		Z toho kategórie			
Zdroje	Spolu	Kapitálové zdroje	zdroje na mzdy (610)	zdroje na odvody do poisťovní (620)	zdroje na transfery partnerom projektov
1. kapitola SAV (111)	991 220	6 250	702 218	198 223	0
z toho: VEGA	34 030	0	0	0	0
MVTS výskumné projekty	17 622	6 250	0	0	0
MVTS podpora	0	0	0	0	0
SASPRO/MOREPRO	0	0	0	0	0
Vydávanie časopisov	0	0	0	0	0
Vedecká výchova (štipendiá)	17 923	0	0	0	0
OTAS (630)	20 365	0	0	0	0

2. ŠF EÚ vr. fin. zo ŠR	0	0	0	0	0
3. medzinárodné grantové projekty	0	0	0	0	0
z toho: H2020	0	0	0	0	0
4. iné štátne a verejné zdroje (spolu)	234 317	0	110 535	39 547	0
z toho: APVV	219 509	0	104 332	36 826	0
podpora z kapitoly MŠVVaŠ SR (stimuly)	0	0	0	0	0
5. ostatné zdroje	124 042	0	1 002	19 334	0
z toho: príjmy z prenájmu	59 952	0	0	0	0
príjmy z podnikateľskej činnosti	0	0	0	0	0
príjmy z expertnej činnosti a služieb	64 090	0	1 002	19 334	0

13. Nadácie a fondy pri organizácii SAV

14. Informácie o aktivitách súvisiacich s uplatňovaním princípov rodovej rovnosti

14.1. Stručné hodnotenie stavu uplatňovania princípov rodovej rovnosti v organizácii, súvisiace aktivity a opatrenia

Stratégia rodovej rovnosti na Ústave stavebníctva a architektúry predstavuje súbor cieľov a opatrení, pri ktorých majú ženy a muži, vedkyne a vedci v celej svojej rozmanitosti slobodu bádania, rovnaké príležitosti na úspech a môžu sa rovnako zúčastňovať na spolupráci, rozhodovaní a vedení Ústavu na všetkých úrovniach. Rodová rovnosť nie je len základným ľudským právom, ale aj základným pilierom pre mierové prosperujúce spoločstvo a udržateľný rozvoj.

Chápeme, že ženy majú rovnaké schopnosti ako muži, a teda obidve pohlavia majú mať prístup k rovnakým príležitostiam, zodpovednostiam a aktivitám, a majú sa hodnotiť rovnako (rodová rovnosť).

Na druhej strane si uvedomujeme, že ženy a muži sú rozdielni, a že partikulárne schopnosti a vlastnosti žien by mali byť uznané za rovnako hodnotné ako partikulárne vlastnosti mužov (rodová rovnocennosť). To znamená spravodlivé zaobchádzanie so ženami a mužmi, ale aj zaobchádzanie, ktoré je síce rozdielne, ale zároveň je primerané z hľadiska práv, výhod, povinností a možností.

Tieto dva koncepty sa navzájom dopĺňajú, avšak rozdielne správanie, aspirácie a potreby žien a mužov treba uznávať a podporovať rovnakým spôsobom.

V súlade s princípmi rodovej rovnosti a ustanoveniami Etického kódexu SAV nerobí vedenie ústavu žiadne rozdiely pri pracovnej náplni, kariérnom raste, či odmeňovaní pracovníkov na základe pohlavia. Zohľadňujú sa v plnej miere predpisy BOZP pri plnení pracovných povinností samostatne u žien a u mužov (napr. dvíhanie bremien).

Plán rodovej rovnosti je postavený na audite súčasného stavu zamestnancov a ich zaradenia podľa vybraných kvantitatívnych a kvalitatívnych ukazovateľov.

Rodová štruktúra pracovníkov ústavu je nasledovná:

- Vedúci oddelení: 50 % mužov a 50 % žien
- THS: 86 % žien a 14 % mužov
- Oddelenie aplikovanej mechaniky: 87,5 % mužov a 12,5 % žien
- Oddelenie optiky a termofyziky: 91 % mužov a 9 % žien
- Oddelenie materiálov a konštrukcií: 66 % mužov a 34 % žien
- Vedenie Ústavu: 60 % mužov a 40 % žien
- Doktorandské štúdium: 100 % žien

Z hľadiska rodovej skladby je na ústave zamestnaných 29 mužov a 16 žien, z toho VŠ pracovníkov je 24 mužov a 9 žien. Z tvorivých pracovníkov je jedna žena s titulom DrSc., jedna v kvalifikačnom stupni IIa a tri interné doktorandky. Z hlavných riešiteľov projektov je iba jedna žena, čo súvisí aj s vekovým zložením pracovníkov ústavu, nakoľko veková kategória 40 – 60 rokov, ktorá je nositeľom ideí a hlavným žiadateľom o projekty, je na ústave slabo zastúpená.

14.2. Rodová skladba hlavných riešiteľov (vedúcich) projektov

Tabuľka 14a Rodová skladba hlavných riešiteľov domácich projektov

ŠTRUKTÚRA PROJEKTOV	Organizácia SAV je nositeľom projektu			Organizácia SAV je zmluvným partnerom		
	Počet	Hlavný riešiteľ		Počet	Hlavný riešiteľ za organizáciu	
		Muž	Žena		Muž	Žena
1. Projekty VEGA	6	5	1	0	0	0
2. Projekty APVV	4	4	0	0	0	0
3. Projekty EŠIF	0	0	0	0	0	0
4. Projekty SASPRO, MoRePro	0	0	0	0	0	0
5. Iné projekty (FM EHP, Vedecko-technické projekty, na objednávku rezortov a pod.)	1	1	0	0	0	0

Tabuľka 14b Rodová skladba hlavných riešiteľov medzinárodných projektov

ŠTRUKTÚRA PROJEKTOV	Organizácia SAV je nositeľom projektu			Organizácia SAV je zmluvným partnerom		
	Počet	Hlavný riešiteľ		Počet	Hlavný riešiteľ za organizáciu	
		Muž	Žena		Muž	Žena
1. Projekty Horizont 2020 a Horizont Európa	0	0	0	0	0	0
2. Projekty ERA.NET, ESA, JRP	0	0	0	0	0	0
3. Projekty COST	0	0	0	0	0	0

4. Projekty EUREKA, NATO, UNESCO, CERN, IAEA, IVF, ERDF a iné	0	0	0	2	2	0
5. Projekty v rámci medzivládnych dohôd	0	0	0	0	0	0
6. Bilaterálne projekty MAD, Mobility, Open Mobility	0	0	0	0	0	0
7. Bilaterálne projekty ostatné	0	0	0	0	0	0
8. Podpora MVTs z národných zdrojov okrem SAV (APVV a iné)	0	0	0	0	0	0
9. SAS-UPJŠ ERC Visiting Fellowship Grants	0	0	0	0	0	0
10. Iné projekty	0	0	0	0	0	0

Stratégia rodovej rovnosti na roky sa zameria na týchto 4 strategických oblasti:

1. Opatrenia proti rodovo podmienenému šikanovaniu, násiliu a sexuálnemu obťažovaniu
2. Usilovať sa o pomerné alebo vyvážené zastúpenie žien a mužov na verejnom rozhodovaní (Vedecká rada, Správna rada, Atestačná komisia, a pod.)
3. Vytvoriť podmienky pre rovnováhu medzi pracovným a rodinným životom, vrátane podpory využívania jasíel a materských škôl, športových štruktúr a športových podujatí, spoločenských aktivít.
4. Začlenenie partikulárnosti rodových vlastností do služieb Ústavu (popularizácie, výskumu a vyučovania).

14.3. Výskum zameraný na rodovú problematiku

Uved'te stručné, základné informácie o projektoch orientovaných na rodovú problematiku, ak organizácia takýto výskum realizuje. Informácie o financovaní a výsledkoch takýchto projektov sa nachádzajú v kapitole 2 a v prílohe C.

15. Iné významné činnosti organizácie SAV

16. Vyznamenania, ocenenia a ceny udelené pracovníkom organizácie v roku 2021

16.1. Domáce ocenenia

16.1.1. Ocenenia SAV

Kocifaj Miroslav

Špičková publikácia SAV

Oceňovateľ: PSAV

Opis: Kocifaj, Kómar, Lamphar & Wallner, MNRAS Letters 496, L138-L141, 2020 v kategórii "Publikácie vo vedeckých časopisoch registrovaných v databáze Nature Index)

Kocifaj Miroslav

Špičková publikácia SAV

Oceňovateľ: PSAV

Opis: Kocifaj & Bará, MNRAS Letters 495, L76-L80, 2020 v kategórii "Publikácie vo vedeckých časopisoch registrovaných v databáze Nature Index)

16.1.2. Iné domáce ocenenia

16.2. Medzinárodné ocenenia

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

18. Problémy a podnety pre činnosť SAV

Správu o činnosti organizácie SAV spracoval(i): RNDr. Ladislav Kómar, PhD.

Vedecká rada ústavu schválila Správu o činnosti dňa 20.1.2021.

Riaditeľ organizácie SAV

Predseda vedeckej rady

.....

Prof.Dr.Ing. Martin-Tchingnabé Palou

.....

Mgr. Miroslav Kocifaj, PhD.

Príloha A**Zoznam zamestnancov a doktorandov organizácie k 31.12.2021****Zoznam zamestnancov podľa štruktúry**

	Meno s titulmi	Úväzok (v %)	Ročný prepočítaný úväzok
Vedúci vedeckí pracovníci DrSc.			
1.	Prof. Ing. Ján Sládek, DrSc.	100	1.00
2.	Prof. RNDr. Vladimír Sládek, DrSc.	100	1.00
Vedúci vedeckí pracovníci CSc., PhD.			
1.	Prof.Dr.Ing. Martin-Tchingnabé Palou	100	1.00
2.	Prof. Pihua Wen	50	0.50
Samostatní vedeckí pracovníci			
1.	doc. Ing. Stanislav Darula, CSc.	100	1.00
2.	Mgr. Miroslav Kocifaj, PhD.	100	1.00
3.	RNDr. Ladislav Kómar, PhD.	100	1.00
4.	Ing. Eva Kuzielová, PhD.	100	1.00
5.	Ing. Peter Matiašovský, CSc.	100	1.00
6.	Ing. Miroslav Repka, PhD.	100	1.00
7.	Ing. Ladislav Sátor, PhD.	100	1.00
Vedeckí pracovníci			
1.	Ing. Miroslav Čekon, Doc.,PhD.	50	0.04
2.	Ing. Jakub Čurpek, PhD.	50	0.04
3.	Mgr. Olha Hrytsyna, DrSc.	100	1.00
4.	Ing. Jozef Kriváček, CSc.	20	0.03
5.	Mgr. Jaromír Petržala, PhD.	100	1.00
6.	Ing. Tomáš Profant, Doc.,PhD.	50	0.50
7.	Ing. Michal Slaný, PhD.	60	0.60
8.	Ing. Richard Slávik, PhD.	50	0.04
9.	Dr. Kai Pong Tong	100	1.00
10.	Mgr. PhD. Stefan Wallner	70	0.50
11.	Ing. Matúš Žemlička, PhD.	100	1.00
Odborní pracovníci s VŠ vzdelaním (výskumní a vývojoví zamestnanci)			
1.	Ing. Kristína Compeľová	20	0.08
2.	Ing. Jana Čepčianska	30	0.30
3.	Mgr. Stanislav Fecko	50	0.50
4.	Mgr. Maryan Hrytsyna	100	0.08

5.	RNDr. Anna Kocifajová	100	1.00
6.	Ing. Peter Mihálka, PhD.,	50	0.50
7.	Ing. Janette Podhorská	30	0.08
8.	Ing. Marián Vrabec	100	1.00
Odborní pracovníci s VŠ vzdelaním (ostatní zamestnanci)			
1.	Mgr. Renata Miklošová	100	1.00
2.	Mgr. Dagmar Práznovská	80	0.80
3.	Ing. Danko Sitarčíková	80	0.80
Odborní pracovníci ÚSV			
1.	Iveta Boříková	100	0.00
2.	Sylvia Bučičová	100	1.00
3.	Martin Habovštiak	100	1.00
4.	Katarína Jakubove	100	1.00
5.	Roman Kralovič	100	1.00
6.	Anna Rajnohová	100	1.00
7.	Dagmar Slámová	100	1.00
Ostatní pracovníci			
1.	Eva Janotová	80	0.80
2.	Karol Kasák	100	1.00
3.	Jozef Kováč	80	0.80
4.	Rudolf Maninka	100	1.00
5.	Lucia Pinkavová	100	1.00

Zoznam zamestnancov, ktorí odišli v priebehu roka

	Meno s titulmi	Dátum odchodu	Ročný prepočítaný úväzok
Samostatní vedeckí pracovníci			
1.	Mgr. Hector Antonio Solano L., PhD.	30.11.2021	0.25
Odborní pracovníci s VŠ vzdelaním (ostatní zamestnanci)			
1.	Ing. Katarína Mocková	31.1.2021	0.08
Ostatní pracovníci			
1.	Pavol Krchňák	15.10.2021	0.23

Zoznam doktorandov

	Meno s titulmi	Škola/fakulta	Študijný odbor
Interní doktorandi hrazení z prostriedkov SAV			
1.	Ing. Kristína Compeľová	Fakulta chemickej a potravinárskej technológie STU	5.2.19 anorganická technológia a materiály
2.	Ing. Jana Čepčianska	Fakulta chemickej a potravinárskej technológie STU	5.2.8 stavebníctvo
3.	Ing. Janette Podhorská	Stavebná fakulta STU	5.2.8 stavebníctvo
Interní doktorandi hrazení z iných zdrojov			
<i>organizácia nemá interných doktorandov hrazených z prostriedkov SAV</i>			
Externí doktorandi			
<i>organizácia nemá externých doktorandov</i>			

Zoznam zamestnancov prijatých do jedného roka od získania PhD.

	Meno s titulmi	Dátum obhajoby	Dátum prijatia	Úväzok (v %)
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Zoznam emeritných vedeckých zamestnancov

	Meno s titulmi
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Príloha B

Projekty riešené v organizácii

Medzinárodné projekty

Programy: IEA

1.) Integrované riešenia pre denné a umelé osvetlenie (*Integrated Solutions for daylighting and electric lighting*)

Zodpovedný riešiteľ:	Stanislav Darula
Trvanie projektu:	1.1.2018 / 30.6.2021
Evidenčné číslo projektu:	IEA SHC Task 61
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Fraunhofer Institute of Building Physics
Počet spoluriešiteľských inštitúcií:	16 - Austrália: 1, Rakúsko: 1, Belgicko: 1, Brazília: 1, Nemecko: 2, Dánsko: 1, Švajčiarsko: 1, Čína: 1, Taliansko: 1, Japonsko: 1, Holandsko: 1, Nórsko: 1, Poľsko: 1, Švédsko: 1, USA: 1
Čerpané financie:	-

Dosiahnuté výsledky:

Programy: Multilaterálne - iné

2.) Vplyv chemického zloženia betónu na jeho dlhodobú trvanlivosť v (ionizujúcom) ionizovanom prostredí (*The Effect of Chemical Composition of Concrete on Its Long-term Performance in Irradiated Environment*)

Zodpovedný riešiteľ:	Martin-Tchingnabé Palou
Zodpovedný riešiteľ v organizácii SAV:	Martin-Tchingnabé Palou
Trvanie projektu:	1.10.2017 / 31.7.2021
Evidenčné číslo projektu:	
Organizácia je koordinátorom projektu:	nie
Koordinátor:	Kyoungsoo Park
Počet spoluriešiteľských inštitúcií:	9 - Česko: 2, Maďarsko: 2, Kórejská republika: 3, Poľsko: 2
Čerpané financie:	MVTS V4-Korea: 17622 €

Dosiahnuté výsledky:

Optimalizácia zrnitostných kriviek magnetitu, barytu alebo ich zmesí pre vývoj samozhutniteľných betónov s objemovou hmotnosťou nad 3000 kg m⁻³.

Cieľom tejto štúdie je určiť podiel zmesi spojiva, ťažkých agregátov, pomeru vody k spojivu a prísad pri vývoji samozhutniteľného betónu s objemovou hmotnosťou vyššou ako 2 600 kg m⁻³. Práca sa tiež zameriava na hodnotenie inžinierskych vlastností, pórovitej štruktúry a mikroštruktúry vyvinutého ťažkého samozhutniteľného betónu. Ako plnivá sa použili baryt (BA), magnetit (MAG) alebo ich zmes (MIX), zatiaľ čo spojivo bolo zložené z portlandského cementu, vysokopecnej trosky, metakaolínu a vápenca v pomere 65 : 15 : 5 : 15. Na základe výsledkov skúšky V-lievikom a skúšky sadnutia bol pomer spojivo : plnivo : spojivo k cementu optimalizovaný nasledovne: (1) BA 1 : 3,5 :

0,42, (2) MAG 1 : 4 : 0,42, (3) MIX 1 : 3,75 : 0,42 s maximálnou veľkosťou agregátu nepresahujúcou 20 mm. Nielen objemová hmotnosť ťažkých betónov bola ovplyvnená objemovou hmotnosťou agregátu, ale tiež boli zistené, že mechanické vlastnosti, zmrašťovanie, dynamický modul pružnosti, pórová štruktúra a mikroštruktúra závisia od charakteristík plnív.

PODHORSKÁ, Janette - PALOU, Martin T. - GMÉLING, Katalin - SZILÁGYI, Veronika - HARSÁNYI, Ildikó - SZENTMIKLÓSI, László. Experimental study of selected properties of heavyweight concrete based on analysis of chemical composition and radioactive elements of its components. In Solid State Phenomena : 18th International Conference on Silicate Binders, ICBM 2019, 2021, vol. 321 SSP, p. 113-118. (2020: 0.215 - SJR, Q3 - SJR). ISSN 1012-0394. Dostupné na: <https://doi.org/10.4028/www.scientific.net/SSP.321.113>

ČEPČIANSKA, Jana - DRAGOMIROVÁ, Janette - KUZIELOVÁ, Eva - PALOU, Martin T. - ŽEMLIČKA, Matúš - NOVOTNÝ, Radoslav. Hydration heat of white cement. In ICTAC 2020. 17th International Congress on Thermal Analysis and Calorimetry : e-book of abstracts [elektronický zdroj]. - Kraków : Wydawnictwo Naukowe AKAPIT, 2021, p. 126. ISBN 978-83-65955-52-4. Názov z obrazovky. Dostupné na internete: https://cris.vub.be/ws/portalfiles/portal/74787050/_e_Book_of_Abstracts_ICTAC2020.pdf

PALOU, Martin T. - KUZIELOVÁ, Eva - NOVOTNÝ, Radoslav - ŽEMLIČKA, Matúš - ČEPČIANSKA, Jana - DRAGOMIROVÁ, Janette. Investigation of the hydration of Dyckerhoff G-Oil Cement and its blends by Calorimetry and Thermal methods. In ICTAC 2020. 17th International Congress on Thermal Analysis and Calorimetry : e-book of abstracts [elektronický zdroj]. - Kraków : Wydawnictwo Naukowe AKAPIT, 2021, p. 65-66. ISBN 978-83-65955-52-4. Názov z obrazovky. Dostupné na internete: https://cris.vub.be/ws/portalfiles/portal/74787050/_e_Book_of_Abstracts_ICTAC2020.pdf

PODHORSKÁ, Janette - PALOU, Martin T. - ČEPČIANSKA, Jana. Vývoj vysokopevnostného ťažkého betónu na báze Portlandského cementu a doplnkových cementových materiálov. In Kvalita cementu 2021 : XIV. ročník odborného semináře, Výskumný ústav stavebních hmot, 13. - 14. října 2021, Znojmo. Lektorovali: René Čechmánek, Martin Nejedlík. - Výzkumný ústav stavebních hmot, 2021, s. 37. ISBN 978-80-87397-35-0.

Domáce projekty

Programy: VEGA

1.) Výskum priamej zložky dennej osvetlenosti v architektonickom a interiérovom prostredí (Research of direct component of daylighting in architectural and interior environment)

Zodpovedný riešiteľ:	Stanislav Darula
Trvanie projektu:	1.1.2020 / 31.12.2022
Evidenčné číslo projektu:	VEGA- 2/0017/20
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA SAV: 2195 €

Dosiahnuté výsledky:

DARULA, Stanislav - MOHELNÍKOVÁ, Jitka - KRÁL, Jakub. Daylight in buildings based on tubular light guides. In Journal of building engineering, 2021, vol. 44, art. no. 102608. (2020: 5.318 - IF, Q1 - JCR, 0.974 - SJR, Q1 - SJR). ISSN 2352-7102.

KITTLER Richard, DARULA Stanislav. Redistributions of luminance patterns on standard sky types. Lighting Research & Technology First Published May 26, 2021 Research Article, <https://doi.org/10.1177/14771535211015507>

DARULA, Stanislav - KITTLER, Richard. The new method to calibrate ISO/CIE general skies modelled in artificial skies. In Light & Engineering, 2021, vol. 29, no. 1, p. 11-20. (2020: 0.421 - IF, Q4 - JCR, 0.218 - SJR, Q3 - SJR). ISSN 0236-2945.

KITTLER, Richard - DARULA, Stanislav. Slovenský prínos k teórii denného osvetlenia interiérov budov. In Světlo : časopis pro světelnou techniku a osvětlování, 2021, roč. 24, č. 6, s. 58-61. ISSN 1212-0812

DARULA,,S. BEDEUTUNG DER BESONNUNG VON INNEN_ UND AUSSERÄUMEN IN STÄDTISCHER UMGEBUNG. 25. Internationale Konferenz Stadttechnik Karlsbader Region 2020 "STADT UND LICHT". 5.11. 2021 CHEB, Praha: ČKAIT, p. 59-68. ISBN 978-80 -88265 -25 -2.

DARULA, Stanislav. Príspevok k presneniu a využitiu slnečného žiarenia v bytoch na Slovensku. Kurz osvětlovací techniky XXXVI, Dlouhé Stráně, 4. – 6. 10. 2021, Ostrava: VŠB TU, p. 20-23. ISBN 978-80-248-4556-2.

DARULA, Stanislav, SKSI, Michal Czafik, Branislav Puškár. Denné osvetlenie obytnej miestnosti s loggiou. 24. medzinárodná konferencia Svetlo 2021, On line, Bratislava: SSTS, 20. 22. 10. 2021.

DARULA,, S. NÁVRH DENNÉHO OSVETLENIA BUDOV. ONLINE KONFERENCIA „NÁVRH A PROJEKTOVANIE OSVETLENIA“. Bratislava: SKSI, 9. marca 2021

2.) Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry (*Diffuse light in urban environment: A new model which embraces the optical properties of a local urban atmosphere*)

Zodpovedný riešiteľ:	Miroslav Kocifaj
Trvanie projektu:	1.1.2020 / 31.12.2023
Evidenčné číslo projektu:	DIFFUSE
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	VEGA SAV: 5928 €

Dosiahnuté výsledky:

KOCIFAJ, Miroslav - KÓMAR, Ladislav - KUNDRACIK, F. - MARKOŠ, Peter - PETRŽALA, Jaromír - VIDEEN, Gorden. The Nature, Amplitude and Control of Microwave Attenuation in the Atmosphere. In Journal of Geophysical Research - Atmospheres, 2021, vol. 126, no. 17, art. no. e2021JD034978. (2020: 4.261 - IF, Q2 - JCR, 1.670 - SJR, Q1 - SJR). ISSN 2169-897X. Dostupné na: <https://doi.org/10.1029/2021JD034978>.

KOCIFAJ, Miroslav - KUNDRACIK, F. - BARENTINE, John C. - BARÁ, Salvador. The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 504, p. L40-L44. (2020: 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slab030>

KOCIFAJ, Miroslav - BARÁ, Salvador. Night-time monitoring of the aerosol content of the lower atmosphere by differential photometry of the anthropogenic skyglow. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 500, p. L47-L51. (2020: 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slaa181>

KOCIFAJ, Miroslav - KÓMAR, Ladislav. Physics interpretation of ISO/CIE sky types. In Solar Energy, 2021, vol. 225, p. 3-10. (2020: 7.609 - IF, Q1 - JCR, 1.337 - SJR, Q1 - SJR). ISSN 0038-092X. Dostupné na: <https://doi.org/10.1016/j.solener.2021.07.017>

KOCIFAJ, Miroslav - BARENTINE, John C. Air pollution mitigation can reduce the brightness of the night sky in and near cities. In Scientific Reports, 2021, vol. 11, p. 14622. (2020: 4.379 - IF, Q1 - JCR, 1.240 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS). ISSN 2045-2322. Dostupné na: <https://doi.org/10.1038/s41598-021-94241-1>

KOCIFAJ, Miroslav - KUNDRACIK, F. - DURISCOE, D. - BALM, S. P. - WALLNER, Stefan. Using ground-based measurements to recover the spectra of radiation escaping from distant light-pollution sources. In Monthly Notices of the Royal Astronomical Society, 2021, vol. 506, p. 2739-2745. (2020: 5.287 - IF, Q1 - JCR, 2.058 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS, NASA ADS). ISSN 0035-8711. Dostupné na: <https://doi.org/10.1093/mnras/stab1886>

MARKOŠ, Peter - KOCIFAJ, Miroslav - KUNDRACIK, F. - VIDEEN, Gorden. Electromagnetic resonances observed in small, charged particles. In Journal of Quantitative Spectroscopy & Radiative Transfer, 2021, vol. 272, art. no. 107798. (2020: 2.468 - IF, Q2 - JCR, 0.810 - SJR, Q1 - SJR). ISSN 0022-4073. Dostupné na: <https://doi.org/10.1016/j.jqsrt.2021.107798>

PETRŽALA, Jaromír - KOCIFAJ, Miroslav. Variability of Diffuse Daylight Due to the Diversity of Cloud Arrays. In Applied Sciences-Basel, 2021, vol. 11, art. no. 9190. (2020: 2.679 - IF, Q2 - JCR, 0.435 - SJR, Q2 - SJR). ISSN 2076-3417. Dostupné na: <https://doi.org/10.3390/app11199190>

PETRŽALA, Jaromír. Revision of path-integral approach to radiative transfer. In Journal of Quantitative Spectroscopy & Radiative Transfer, 2021, vol. 270, art. no. 107670. (2020: 2.468 - IF, Q2 - JCR, 0.810 - SJR, Q1 - SJR). ISSN 0022-4073. Dostupné na: <https://doi.org/10.1016/j.jqsrt.2021.107670>

3.) Výskum energetickej účinnosti inovatívnych BIPV/T článkov chladených PCM technológiou. (*The energy efficiency of an innovative BIPV/T-TE-PCM module with PCM passive cooling*)

Zodpovedný riešiteľ:	Ladislav Kómar
Trvanie projektu:	1.1.2020 / 31.12.2023
Evidenčné číslo projektu:	2/0095/20
Organizácia je	áno
koordinátorom projektu:	
Koordinátor:	Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií:	0

Čerpané financie: VEGA SAV: 3952 €

Dosiahnuté výsledky:

MIHALKA, Peter – MATIAŠOVSKÝ, Peter: Correlation between external boundary conditions and convective heat transfer at vertical PV panel, In: Thermophysics 2021. (v tlači)

KÓMAR, Ladislav - PETRŽALA, Jaromír - LIPNICKÝ, Lukáš - DUBNIČKA, Roman. Adaptive splines for luminous intensity data regression. In: Svetlo - Light 2021, 20.-22.10 2021, Bratislava (v tlači)

KÓMAR, Ladislav - KOCIFAJ, Miroslav - PETRŽALA, Jaromír. Modeling diffuse illuminance on vertical planes using minimization technique. In: Svetlo - Light 2021, 20.-22.10 2021, Bratislava (v tlači)

KÓMAR, Ladislav. Influence of atmospheric aerosol on the intensity of direct and diffuse radiation. In: Svetlo - Light 2021, 20.-22.10 2021, Bratislava (v tlači)

4.) Štúdium degradácie viaczložkových cementových materiálov v dôsledku uhličitej korózie v podmienkach simulujúcich geotermálne vrty (*Study of multicomponent cement material degradation under conditions simulating CO₂ enriched geothermal environment*)

Zodpovedný riešiteľ: Eva Kuzielová
Trvanie projektu: 1.1.2021 / 31.12.2024
Evidenčné číslo projektu: 2/0032/21
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: VEGA SAV: 4391 €

Dosiahnuté výsledky:

KUZIELOVÁ Eva - SLANÝ Michal - ŽEMLIČKA Matúš - MÁSILKO Jiří - PALOU, Martin-T. Phase Composition of Silica Fume-Portland Cement Systems Formed under Hydrothermal Curing Evaluated by FTIR, XRD, and TGA. In Materials, 2021, vol. 14, art. no. 2786. Typ: ADCA

KUZIELOVÁ Eva - SLANÝ Michal - ŽEMLIČKA Matúš - MÁSILKO Jiří - ŠILER, Pavel - PALOU, Martin-T. THERMAL STABILITY OF THE PHASES DEVELOPED AT HIGH-PRESSURE HYDROTHERMAL CURING OF CLASS G CEMENT WITH DIFFERENT POZZOLANIC AND LATENT HYDRAULIC ADDITIVES. Zaslané do Journal of Thermal Analysis and Calorimetry, the submission id: JTAC-D-21-01818. Typ: ADCA

Eva Kuzielová, Zora Hajdúchová, Matúš Žemlička VPLYV HYDROTERMÁLNYCH PODMIENOK NA VLASTNOSTI CEMENTOVÝCH SPOJÍV. In ChemZi : Zborník abstraktov: 73. zjazd chemikov, 6-10 september 2021, Vysoké Tatry, Horný Smokovec, Slovensko. – Bratislava : Slovenská chemická spoločnosť, 2021, 2021, roč. 17, s. 99, 3P04. ISSN 1336-7242. Typ: AFH

ČEPČIANSKA, Jana – PODHORSKÁ, Janette – KUZIELOVÁ, Eva – PALOU, Martin T. – ŽEMLIČKA, Matúš – NOVOTNÝ, Radoslav. Hydration heat of white cement. In ICTAC 2020. 17th International Congress on Thermal Analysis and Calorimetry : e-book of abstracts [elektronický zdroj]. – Kraków : Wydawnictwo Naukowe AKAPIT, 2021, p. 126. ISBN 978-83-65955-52-4. Typ: AFG

KUZIELOVÁ, Eva – SLANÝ, Michal – ŽEMLIČKA, Matúš – PALOU, Martin T. Multicomponent Portland-cement based compositions for geothermal wells. In ICTAC 2020. 17th International Congress on Thermal Analysis and Calorimetry : e-book of abstracts [elektronický zdroj]. – Kraków : Wydawnictwo Naukowe AKAPIT, 2021, p. ISBN 978-83-65955-52-4. Typ: AFG

5.) Materiálové zloženie a vlastnosti samozhutiteľných ťažkých betónov (*Material composition and properties of Self-Compacting Heavyweight Concrete*)

Zodpovedný riešiteľ: Martin-Tchingnabé Palou
Trvanie projektu: 1.1.2021 / 31.12.2023
Evidenčné číslo projektu: VEGA 2/0017/21
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských 0
inštitúcií:
Čerpané financie: VEGA SAV: 4391 €

Dosiahnuté výsledky:

Riešenie projektu v prvom roku bolo zamerané na optimalizáciu materiálového zloženia na základe hydratačného tepla, na určenie vplyvu teplôt na hydratáciu, štúdium kinetiky a mechanizmu hydratácie cementu triedy G. Cement triedy G bol postupne nahradený tromi doplnkovými cementovými materiálmi (vysokopecná granulovaná troska, metakolín, vápenec) v rôznych pomeroch. V závislosti od teploty a materiálového zloženia boli zistené dva až tri druhy hydratačných reakcií: tvorba C-S-H, AFm a C-A-S-H sprevádzaná tvorbou monokarboaluminátových a hemikarboaluminátových hydrátov. Súčasné použitie vysokopecnej granulovanej trosky, metakaolínu a vápenca bolo synergicky prospešné počas neskoršej hydratácie, ktorá je urýchľovaná pôsobením teplôt.

PALOU, Martin T. - KUZIELOVÁ, Eva - NOVOTNÝ, Radoslav - ŽEMLIČKA, Matúš - ČEPČIANSKA, Jana - PODHORSKÁ, Janette. Investigation of the hydration of Dyckerhoff G-Oil Cement and its blends by Calorimetry and Thermal methods. In ICTAC 2020. 17th International Congress on Thermal Analysis and Calorimetry : e-book of abstracts [elektronický zdroj].

6.) Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií (*Multiscale study and modelling of composite macrostructures*)

Zodpovedný riešiteľ: Vladimír Sládek
Trvanie projektu: 1.1.2020 / 31.12.2023
Evidenčné číslo projektu: 2/0061/20
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských 0
inštitúcií:
Čerpané financie: VEGA SAV: 13173 €

Dosiahnuté výsledky:

H. Zheng, J. Sladek, V. Sladek, S.K. Wang, P.H. Wen: Hybrid meshless/displacement discontinuity method for FGM Reissner's plate with cracks. Appl Math Mod 90 (2021), 1226-1244.
<https://doi.org/10.1016/j.apm.2020.10.023>

J. Sladek, V. Sladek, M. Repka, Q. Deng: Flexoelectric effect in dielectrics under a dynamic load. *Comp. Struct.* 260 (2021), 113528 <https://doi.org/10.1016/j.compstruct.2020.113528>

Xinpeng Tian, J. Sladek, V. Sladek, Qian Deng: A collocation mixed finite element method for the analysis of flexoelectric solids. *Int Jour Solids & Structures* 217-218 (2021), 27-39. <https://doi.org/10.1016/j.ijsolstr.2021.01.031>

J. Sladek, V. Sladek, S.M. Hosseini: Analysis of a curved Timoshenko nano-beam with flexoelectricity. *Acta Mechanica*, 232 (2021), 1563-1581. <https://doi.org/10.1007/s00707-020-02901-6>

W. Huang, Y.D. Tang, J. Sladek, V. Sladek, P. Wen: Meshless analysis for cracked shallow shell. *Eng. Anal. Bound. Elem.* 130 (2021), 145-160. <https://doi.org/10.1016/j.enganabound.2021.05.005>

J. Sladek, V. Sladek, M. Xu, Q. Deng: A cantilever beam analysis with flexomagnetic effect. *Meccanica* 56 (2021), 2281-2292. <https://doi.org/10.1007/s11012-021-01357-9>

J.J. Yang, J.Z. Liu, J. Sladek, V. Sladek, P.H. Wen: Stress intensity factor and T-stresses by boundary integral equations: 3D statics. *Engineering Fracture Mechanics* 256 (2021), 107917. <https://doi.org/10.1016/j.engfracmech.2021.107917>

J. Sladek, V. Sladek, M. Repka: The heat conduction in nanosized structures, *Physical Mesomechanics* 24 (2021), 611-617. <http://link.springer.com/article/10.1134/S102995992105012X>

J. Sladek, V. Sladek, M. Repka, E. Pan: Size effect in piezoelectric semiconductor nanostructures, *Jour. Intelligent Materials and Structures* (2021), <https://doi.org/10.1177/1045389X211053049>

M. Repka, J. Sladek, V. Sladek: Geometrical nonlinearity for a Timoshenko beam with flexoelectricity, *Nanomaterials* (2021), 11113123 <https://www.mdpi.com/2079-4991/11/11/3123/pdf>

Sladek V., Sladek J. (2021) Element-Free Discretization Method with Moving Finite Element Approximation. In: Atluri S.N., Vušanović I. (eds) *Computational and Experimental Simulations in Engineering. ICCES 2021. Mechanisms and Machine Science*, vol 98. Springer, Cham., pp. 367-383. https://doi.org/10.1007/978-3-030-67090-0_30

Sator L., Sladek V., Sladek J. (2021) Bending of Piezoelectric FGM Plates Under Thermal Loads. In: Atluri S.N., Vušanović I. (eds) *Computational and Experimental Simulations in Engineering. ICCES 2021. Mechanisms and Machine Science*, vol 98. Springer, Cham., pp. 323-337. https://doi.org/10.1007/978-3-030-67090-0_27

Sladek J., Sladek V., Repka M. (2021) The MLPG Method in Multiphysics and Scale Dependent Problems. In: Atluri S.N., Vušanović I. (eds) *Computational and Experimental Simulations in Engineering. ICCES 2021. Mechanisms and Machine Science*, vol 98. Springer, Cham., pp. 385-403 https://doi.org/10.1007/978-3-030-67090-0_31

Programy: APVV

7.) Globálna charakterizácia svetelného znečistenia (*Global Characterization of Skyglow*)

Zodpovedný riešiteľ: Miroslav Kocifaj

Trvanie projektu: 1.7.2019 / 30.6.2023
Evidenčné číslo projektu: APVV-18-0014
Organizácia je áno
koordinátorom projektu:
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 44045 €

Dosiahnuté výsledky:

KOCIFAJ, Miroslav - KUNDRACIK, F. - BARENTINE, John C. - BARÁ, Salvador. The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 504, p. L40-L44. (2020: 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slab030>

KOCIFAJ, Miroslav - BARÁ, Salvador. Night-time monitoring of the aerosol content of the lower atmosphere by differential photometry of the anthropogenic skyglow. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 500, p. L47-L51. (2020: 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slaa181>

KOCIFAJ, Miroslav - KÓMAR, Ladislav. Physics interpretation of ISO/CIE sky types. In Solar Energy, 2021, vol. 225, p. 3-10. (2020: 7.609 - IF, Q1 - JCR, 1.337 - SJR, Q1 - SJR). ISSN 0038-092X. Dostupné na: <https://doi.org/10.1016/j.solener.2021.07.017>

KOCIFAJ, Miroslav - BARENTINE, John C. Air pollution mitigation can reduce the brightness of the night sky in and near cities. In Scientific Reports, 2021, vol. 11, p. 14622. (2020: 4.379 - IF, Q1 - JCR, 1.240 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS). ISSN 2045-2322. Dostupné na: <https://doi.org/10.1038/s41598-021-94241-1>

KOCIFAJ, Miroslav - KUNDRACIK, F. - DURISCOE, D. - BALM, S. P. - WALLNER, Stefan. Using ground-based measurements to recover the spectra of radiation escaping from distant light-pollution sources. In Monthly Notices of the Royal Astronomical Society, 2021, vol. 506, p. 2739–2745. (2020: 5.287 - IF, Q1 - JCR, 2.058 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS, NASA ADS). ISSN 0035-8711. Dostupné na: <https://doi.org/10.1093/mnras/stab1886>

PETRŽALA, Jaromír - KOCIFAJ, Miroslav. Variability of Diffuse Daylight Due to the Diversity of Cloud Arrays. In Applied Sciences-Basel, 2021, vol. 11, art. no. 9190. (2020: 2.679 - IF, Q2 - JCR, 0.435 - SJR, Q2 - SJR). ISSN 2076-3417. Dostupné na: <https://doi.org/10.3390/app11199190>

WALLNER, Stefan - PUSCHNIG, Johannes - BINDER, Franz - KOCIFAJ, Miroslav. Sky Quality Meter vs. 'Reality' - Investigating the true effectiveness of SQMs during lighting conversions in Vienna. In ALAN 2021. Artificial Light at Night : Conference Abstract Booklet [elektronický zdroj], p. 147-148. Názov z obrazovky. Dostupné na internete: https://artificiallightatnight.weebly.com/uploads/3/7/0/5/37053463/alan_2021_abstract_booklet__1_.pdf (ALAN 2021 : International Conference on Artificial Light at Night) Typ: GII

KÓMAR Ladislav - PETRŽALA JAROMÍR. Problém, ktorý vieme vypočítať. Quark 2/2021.

8.) Výskum a vývoj mnohozložkových cementových zmesí pre špeciálne konštrukčné materiály
(*Research and development of multi-component cementitious blends for special construction materials*)

Zodpovedný riešiteľ: Martin-Tchingnabé Palou
Trvanie projektu: 1.7.2020 / 30.6.2024
Evidenčné číslo projektu: APVV-19-0490
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií: 0
Čerpané financie: APVV: 54341 €

Dosiahnuté výsledky:

KUZIELOVÁ, Eva - SLANÝ, Michal - ŽEMLIČKA, Matúš - MÁŠILKO, Jiří - PALOU, Martin T. Phase Composition of Silica Fume-Portland Cement Systems Formed under Hydrothermal Curing Evaluated by FTIR, XRD, and TGA. In Materials, 2021, vol. 14, art. no. 2786. (2020: 3.623 - IF, Q1 - JCR, 0.682 - SJR, Q2 - SJR). ISSN 1996-1944. Dostupné na: <https://doi.org/10.3390/ma14112786>

9.) Multiškalovala teória flexoelektricity a nové metódy pre detekciu mikrotrhlín v reálnom čase v dielektrických materiáloch (*A multiscale flexoelectric theory and a new method for real-time detection of microcracks in dielectric materials*)

Zodpovedný riešiteľ: Ján Sládek
Trvanie projektu: 1.10.2018 / 30.9.2021
Evidenčné číslo projektu: SK-CN-RD-18-0005
Organizácia je koordinátorom projektu: áno
Koordinátor: Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií: 1 - Čína: 1
Čerpané financie: APVV: 42052 €

Dosiahnuté výsledky:

X. Tian, J. Sladek, V. Sladek, Q. Deng, Q. Li: Collocation mixed finite elements for flexoelectric solids. International Journal of Solids and Structures 217-218 (2021) 27-39.
<https://doi.org/10.1016/j.ijsolstr.2021.01.031>

J. Sladek, V. Sladek, M. Repka, Q. Deng: Flexoelectric effect in dielectrics under a dynamic load, Composite Structures 260 (2021) 113528.
<https://doi.org/10.1016/j.compstruct.2020.113528>

J. Sladek, V. Sladek, S.M. Hosseini: Analysis of a curved Timoshenko nano-beam with flexoelectricity. Acta Mechanica 232 (2021) 1563-1581.
<https://doi.org/10.1007/s00707-020-02901-6>

J. Sladek, V. Sladek, M. Xu, Q. Deng: A cantilever beam analysis with flexomagnetic effect, Meccanica 56 (2021) 2281-2292. <https://doi.org/10.1007/s11012-021-01357-9>

J. Sladek, V. Sladek, X. Tian, Q. Deng: Mixed FEM for flexoelectric effect analyses in a viscoelastic material. International Journal of Solids and Structures, 234-235 (2022) 111269.
<https://doi.org/10.1016/j.ijsolstr.2021.111269>

O. Hrytsyna, J. Sladek, V. Sladek: The effect of micro-inertia and flexoelectricity on Love wave

propagation in layered piezoelectric structures, *Nanomaterials* 11 (2021) 2270.
<https://doi.org/10.3390/nano11092270>

O. Hrytsyna: Local gradient Bernoulli–Euler beam model for dielectrics: effect of local mass displacement on coupled fields. *Mathematics and Mechanics of Solids* (2021) 26(4) 498–512.
<https://doi.org/10.1177/1081286520963374>

O. Hrytsyna: Electromechanical fields in a hollow piezoelectric cylinder under non-uniform load: Flexoelectric effect. *Mathematics and Mechanics of Solids*.
<https://doi.org/10.1177/10812865211020785>

O. Hrytsyna: The effect of local mass displacement on coupled fields in dielectrics. *Appl Nanosci* (2021). <https://doi.org/10.1007/s13204-021-01714-w>

J. Sladek, V. Sladek, M. Repka, E. Pan: Size effect in piezoelectric semiconductor nanostructures, *Journal of Intelligent Material Systems and Structures* <https://doi.org/10.1177/1045389X211053049>

10.) Optimálny návrh mikro/nano konštrukcii pre metamateriály (*Optimal design of micro/nano structures for metamaterials*)

Zodpovedný riešiteľ:	Ján Sládek
Trvanie projektu:	1.7.2019 / 30.6.2023
Evidenčné číslo projektu:	APVV-18-0004
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	APVV: 59828 €

Dosiahnuté výsledky:

H. Zheng, J. Sladek, V. Sladek, S.K. Wang, P.H. Wen: Hybrid meshless/displacement discontinuity method for FGM Reissner's plate with cracks. *Applied Mathematical Modeling* 90 (2021) 1226-1244.
<https://doi.org/10.1016/j.apm.2020.10.023>

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P.H. Wen, Y.D. Tang, J. Sladek, V. Sladek: BEM analysis for curved cracks, *Engineering Analysis with Boundary Elements* 127 (2021) 91-101. <https://doi.org/10.1016/j.enganabound.2021.03.014>

W. Huang, Y.D. Tang, J. Sladek, V. Sladek, P.H. Wen: Meshless analysis for cracked shallow shell, *Engineering Analysis with Boundary Elements* 130 (2021) 145-160.
<https://doi.org/10.1016/j.enganabound.2021.05.005>

J.J. Yang, J.Z. Liu, J. Sladek, V. Sladek, P.H. Wen: Stress intensity factors and T-stresses by

boundary integral equations: 3D statics, Engineering Fracture Mechanics 256 (2021) 107917. <https://doi.org/10.1016/j.engfracmech.2021.107591>

J. Sladek, V. Sladek, M. Repka: The The heat conduction in nanosized structures. Physical Mesomechanics, 24 (2021) 611 – 617. DOI: 10.1134/S102995992105012X

M. Repka, J. Sladek, V. Sladek: Geometrical nonlinearity for a Timoshenko beam with flexoelectricity, Nanomaterials 11 (2021) 3123. <https://doi.org/10.3390/nano11113123>

Programy: Iné projekty

11.) Nežiadúci a cieleň rezonančný útlm mikrovlnných komunikačných liniek (*The mechanisms of targeted resonant attenuation of microwave signals*)

Zodpovedný riešiteľ:	Miroslav Kocifaj
Trvanie projektu:	1.4.2019 / 30.6.2021
Evidenčné číslo projektu:	SEMOD-74-2/2019
Organizácia je koordinátorom projektu:	áno
Koordinátor:	Ústav stavebníctva a architektúry SAV
Počet spoluriešiteľských inštitúcií:	0
Čerpané financie:	Ministerstvo obrany SR: 10490 €

Dosiahnuté výsledky:

MARKOŠ, Peter - KOCIFAJ, Miroslav - KUNDRACIK, F. - VIDEEN, Gorden. Electromagnetic resonances observed in small, charged particles. In Journal of Quantitative Spectroscopy & Radiative Transfer, 2021, vol. 272, art. no. 107798. (2020: 2.468 - IF, Q2 - JCR, 0.810 - SJR, Q1 - SJR). ISSN 0022-4073. Dostupné na: <https://doi.org/10.1016/j.jqsrt.2021.107798>

KOCIFAJ, Miroslav - KÓMAR, Ladislav - KUNDRACIK, F. - MARKOŠ, Peter - PETRŽALA, Jaromír - VIDEEN, Gorden. The Nature, Amplitude and Control of Microwave Attenuation in the Atmosphere. In Journal of Geophysical Research - Atmospheres, 2021, vol. 126, no. 17, art. no. e2021JD034978. (2020: 4.261 - IF, Q2 - JCR, 1.670 - SJR, Q1 - SJR). ISSN 2169-897X. Dostupné na: <https://doi.org/10.1029/2021JD034978>

Príloha C

Publikačná činnosť organizácie (generovaná z ARL)

ADCA Vedecké práce v zahraničných karentovaných časopisoch – impaktovaných

- ADCA01 DARULA, Stanislav - MOHELNÍKOVÁ, Jitka** - KRÁL, Jakub. Daylight in buildings based on tubular light guides. In Journal of building engineering, 2021, vol. 44, art. no. 102608. (2020: 5.318 - IF, Q1 - JCR, 0.974 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 2352-7102. Dostupné na: <https://doi.org/10.1016/j.jobee.2021.102608> (2/0017/20 : Výskum priamej zložky dennej osvetlenosti v architektonickom a interiérovom prostredí)
- ADCA02 DENG, Qiang - SLANÝ, Michal** - ZHANG, Huani - GU, Xuefan - LI, Yongfei - DU, Weichao - CHEN, Gang. Synthesis of alkyl aliphatic hydrazine and application in crude oil as flow improvers. In Energies, 2021, vol. 14, no. 15, p. 4703-1-4703-11. (2020: 3.004 - IF, Q3 - JCR, 0.598 - SJR, Q2 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 1996-1073. Dostupné na: <https://doi.org/10.3390/en14154703>
- ADCA03 HRYTSYNA, Olha** - SLÁDEK, Ján - SLÁDEK, Vladimír. The Effect of Micro-Inertia and Flexoelectricity on Love Wave Propagation in Layered Piezoelectric Structures. In Nanomaterials-Basel, 2021, vol. 11, no. 9, art. no. 2270. (2020: 5.076 - IF, Q1 - JCR, 0.919 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS). ISSN 2079-4991. Dostupné na: <https://doi.org/10.3390/nano11092270> (SK-CN-RD-18-0005 : Multiškálová flexoelektrická teória a nova metóda na detekciu mikrotrhlín v dielektrikach v realnom čase. VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)
- ADCA04 HRYTSYNA, Olha. Local gradient Bernoulli-Euler beam model for dielectrics: effect of local mass displacement on coupled fields. In Mathematics and Mechanics of Solids, 2021, vol. 26, no. 4, p. 498-512. (2020: 2.341 - IF, Q2 - JCR, 0.672 - SJR, Q2 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 1081-2865. Dostupné na: <https://doi.org/10.1177/1081286520963374> (SK-CN-RD-18-0005 : Multiškálová flexoelektrická teória a nova metóda na detekciu mikrotrhlín v dielektrikach v realnom čase)
- ADCA05 HUANG, L.W. - TANG, Y. D. - SLÁDEK, Ján - SLÁDEK, Vladimír - WEN, P. H.**. Meshless analysis for cracked shallow shell. In Engineering Analysis with Boundary Elements, 2021, vol. 130, p. 145-160. (2020: 2.964 - IF, Q2 - JCR, 0.925 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 0955-7997. Dostupné na: <https://doi.org/10.1016/j.enganabound.2021.05.005> (APVV-18-0004 : Optimálny návrh mikro/nano konštrukcií pre metamateriály. VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)
- ADCA06 KOCIFAJ, Miroslav - KUNDRACIK, F. - DURISCOE, D. - BALM, S. P. - WALLNER, Stefan. Using ground-based measurements to recover the spectra of radiation escaping from distant light-pollution sources. In Monthly Notices of the Royal Astronomical Society, 2021, vol. 506, p. 2739-2745. (2020: 5.287 - IF, Q1 - JCR, 2.058 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS, NASA ADS). ISSN 0035-8711. Dostupné na: <https://doi.org/10.1093/mnras/stab1886> (APVV-18-0014 : Globálna charakterizácia svetelného znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA07 KOCIFAJ, Miroslav** - KÓMAR, Ladislav. Physics interpretation of ISO/CIE sky types. In Solar Energy, 2021, vol. 225, p. 3-10. (2020: 7.609 - IF, Q1 - JCR, 1.337 -

- SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 0038-092X. Dostupné na: <https://doi.org/10.1016/j.solener.2021.07.017> (APVV-18-0014 : Globálna charakterizácia svetelného znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA08 KOCIFAJ, Miroslav** - KÓMAR, Ladislav - KUNDRACIK, F. - MARKOŠ, Peter - PETRŽALA, Jaromír - VIDEEN, Gorden. The Nature, Amplitude and Control of Microwave Attenuation in the Atmosphere. In Journal of Geophysical Research - Atmospheres, 2021, vol. 126, no. 17, art. no. e2021JD034978. (2020: 4.261 - IF, Q2 - JCR, 1.670 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 2169-897X. Dostupné na: <https://doi.org/10.1029/2021JD034978> (SEMOD-74-2/2019 : Nežiadúci a cielený rezonančný útlm mikrovlnných komunikačných liniek. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA09 KOCIFAJ, Miroslav - KUNDRACIK, F. - BARENTINE, John C. - BARÁ, Salvador. The proliferation of space objects is a rapidly increasing source of artificial night sky brightness. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 504, p. L40-L44. (2020: 5.287 - IF, Q1 - JCR, 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slab030> (APVV-18-0014 : Globálna charakterizácia svetelného znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA10 KOCIFAJ, Miroslav - BARENTINE, John C. Air pollution mitigation can reduce the brightness of the night sky in and near cities. In Scientific Reports, 2021, vol. 11, art. no. 14622. (2020: 4.379 - IF, Q1 - JCR, 1.240 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents, WOS, SCOPUS). ISSN 2045-2322. Dostupné na: <https://doi.org/10.1038/s41598-021-94241-1> (APVV-18-0014 : Globálna charakterizácia svetelného znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA11 KOCIFAJ, Miroslav - BARÁ, Salvador. Night-time monitoring of the aerosol content of the lower atmosphere by differential photometry of the anthropogenic skyglow. In Monthly Notices of the Royal Astronomical Society: Letters, 2021, vol. 500, p. L47-L51. (2020: 5.287 - IF, Q1 - JCR, 2.067 - SJR, Q1 - SJR). ISSN 1745-3925. Dostupné na: <https://doi.org/10.1093/mnrasl/slaa181> (APVV-18-0014 : Globálna charakterizácia svetelného znečistenia. VEGA 2/0010/20 : Difúzne svetlo v mestskom prostredí: nový model zohľadňujúci vlastnosti lokálnej atmosféry)
- ADCA12 KUZIELOVÁ, Eva** - SLANÝ, Michal - ŽEMLIČKA, Matúš - MÁŠILKO, Jiří - PALOU, Martin T. Phase Composition of Silica Fume-Portland Cement Systems Formed under Hydrothermal Curing Evaluated by FTIR, XRD, and TGA. In Materials, 2021, vol. 14, art. no. 2786. (2020: 3.623 - IF, Q1 - JCR, 0.682 - SJR, Q2 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 1996-1944. Dostupné na: <https://doi.org/10.3390/ma14112786> (APVV-15-0631 : Výskum vysokohodnotných cementových kompozitov za hydrotermálnych podmienok pre potenciálne využitie v hĺbkových vrtoch. APVV-19-0490 : Výskum a vývoj mnohozložkových cementových zmesí pre špeciálne konštrukčné materiály. VEGA 2/0032/21 : Štúdium degradácie viaczložkových cementových materiálov v dôsledku uhličitej korózie v podmienkach simulujúcich geotermálne vrty. VEGA 2/0017/21 : Materiálové zloženie a vlastnosti samozhutniteľných ťažkých betónov)
- ADCA13 LI, Zhaoyi - ZHANG, Jie - QU, Chengtun - TANG, Ying** - SLANÝ, Michal**. Synthesis of Mg-Al hydrotalcite clay with high adsorption capacity. In Materials, 2021, vol. 14, no. 23, p. 7231-1-7231-19. (2020: 3.623 - IF, Q1 - JCR, 0.682 - SJR, Q2 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 1996-1944. Dostupné na: <https://doi.org/10.3390/ma14237231>
- ADCA14 MAN, Yi - WANG, Bo - WANG, Jianxu** - SLANÝ, Michal - YAN, Haiyu** -

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VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)
- ADCA31 ZHENG, H. - SLÁDEK, Ján - SLÁDEK, Vladimír - WANG, S. K. - WEN, P. H.**. Fracture analysis of functionally graded material by hybrid meshless displacement discontinuity method. In Engineering Fracture Mechanics, 2021, vol. 247, art. no. 107591. (2020: 4.406 - IF, Q1 - JCR, 1.258 - SJR, Q1 - SJR, karentované - CCC). (2021 - Current Contents). ISSN 0013-7944. Dostupné na: <https://doi.org/10.1016/j.engfracmech.2021.107591> (APVV-18-0004 : Optimálny návrh mikro/nano konštrukcií pre metamateriály. VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)
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- ADMB02 PODHORSKÁ, Janette - PALOU, Martin T. - GMÉLING, Katalin - SZILÁGYI, Veronika - HARSÁNYI, Ildikó - SZENTMIKLÓSI, László. Experimental study of selected properties of heavyweight concrete based on analysis of chemical composition and radioactive elements of its components. In Solid State Phenomena : 18th International Conference on Silicate Binders, ICBM 2019, 2021, vol. 321 SSP, p. 113-118. (2020: 0.215 - SJR, Q3 - SJR). ISSN 1012-0394. Dostupné na: <https://doi.org/10.4028/www.scientific.net/SSP.321.113> (APVV-15-0631 : Výskum vysokohodnotných cementových kompozitov za hydrotermálnych podmienok pre potenciálne využitie v hĺbkových vrtoch. APVV-19-0490 : Výskum a vývoj mnohozložkových cementových zmesí pre špeciálne konštrukčné materiály. V4-KOREA_RADCON : Vplyv chemického zloženia betónu na jeho dlhodobú trvanlivosť v (ionizujúcom) ionizovanom prostredí)
- ADMB03 SÁTOR, Ladislav** - SLÁDEK, Vladimír - SLÁDEK, Ján. Bending of Piezoelectric FGM Plates Under Thermal Loads. In Mechanisms and Machine Science : Computational and Experimental Engineering and Sciences - Proceedings of ICCES 2020. - Cham, Switzerland : Springer International Publishing AG, 2021, vol. 98, p. 323-337. (2020: 0.159 - SJR, Q4 - SJR). ISSN 2211-0984. Dostupné na: https://doi.org/10.1007/978-3-030-67090-0_27 (SK-CN-RD-18-0005 : Multiškálová flexoelektrická teória a nova metóda na detekciu mikrotrhlín v dielektrikách v realnom čase. VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)
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- ADMB05 SLÁDEK, Vladimír** - SLÁDEK, Ján. Element-Free Discretization Method with Moving Finite Element Approximation. In Mechanisms and Machine Science : Computational and Experimental Engineering and Sciences - Proceedings of ICCES 2020. - Cham, Switzerland : Springer International Publishing AG, 2021, vol. 98, p. 367-383. (2020: 0.159 - SJR, Q4 - SJR). ISSN 2211-0984. Dostupné na: https://doi.org/10.1007/978-3-030-67090-0_30 (SK-CN-RD-18-0005 : Multiškálová flexoelektrická teória a nova metóda na detekciu mikrotrhlín v dielektrikách v realnom čase. VEGA 2/0061/20 : Multiškálové štúdium a modelovanie kompozitných makrokonštrukcií)

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

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chemického zloženia betónu na jeho dlhodobú trvanlivosť v (ionizujúcom) ionizovanom prostredí. VEGA 2/0017/21 : Materiálové zloženie a vlastnosti samozhutniteľných ťažkých betónov)

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- AEC02 MORAVČÍKOVÁ, Henrieta. Funkcjonalizm w Slowacji – narzedzie nowoczesnosci i odrodzenia narodowego. In Modernizm w Europie – Modernizm w Gdyni : Architektura lat miedzywojennych i jej ochrona. - Gdynia, 2009, p. 37-44. ISBN 978-83-907114-3-0.

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URBANIZMUS. ISSN 0044-8680, 2020, vol. 54, no. 1-2, p. 107-116., Registrované v: WOS

- AEC03 PALOU, Martin T. - MAJLING, J. - JANOTKA, Ivan. The performance of blended cements based on sulphoaluminate-belite and Portland cements. In Proceedings of the 11-th International Congress on Chemistry of Cement : Durban, South Africa, 11-16 May 2003. - Durban : G. Grieve and G. Oweis, 2003, p. 1896-1902. ISBN 0-9584085-8-0.

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1. [1.1] ZHANG, G. - YANG, Y. Z. - YANG, H. L. - LI, H. M. Calcium sulphoaluminate cement used as mineral accelerator to improve the property of Portland cement at sub-zero temperature. In CEMENT & CONCRETE COMPOSITES. ISSN 0958-9465, 2020, vol. 106, art. no. 103452. Dostupné na: <https://doi.org/10.1016/j.cemconcomp.2019.103452>., Registrované v: WOS

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

- AECA01 JANOTKA, Ivan - RAY, A. - MOJUMDAR, Subhash Chandra. Acid and sulfate resistance of Portland cement - natural zeolite mortar. In CANMET/ACI : proceedings of the 8th international conference on fly ash, silica fume, slag and natural pozzolans in concrete location. - Ottava : CANMET/Natural Resources, 2004, p. 639-652. ISBN 0-87031-146-8. (CANMET/ACI : international conference on fly ash, silica fume, slag and natural pozzolans in concrete location)

Citácie:

1. [1.1] PEZESHKIAN, M. - DELNAVAZ, A. - DELNAVAZ, M. Effect of Natural Zeolite on Mechanical Properties and Autogenous Shrinkage of Ultrahigh-Performance Concrete. In JOURNAL OF MATERIALS IN CIVIL ENGINEERING. ISSN 0899-1561, 2020, vol. 32, no. 5, art. no. 04020093., Registrované v: WOS

AFA Publikované pozvané príspevky na zahraničných vedeckých konferenciách

- AFA01 MORAVČÍKOVÁ, Henrieta. Sensing the common ground. Common Pavilions. In Biennale Architecture 2012, Common Ground, Venice 09. – 11. 2012. - 2012. Dostupné na internete: <http://www.commonpavilions.com/pavilion-czech-slovak-republic.html>

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1. [1.1] GARNSEY, E. Justice of Visual Art: Creative State-Building in Times of Political Transition. In JUSTICE OF VISUAL ART: CREATIVE STATE-BUILDING IN TIMES OF POLITICAL TRANSITION, 2020, p. 1-232., Registrované v: WOS

AFC Publikované príspevky na zahraničných vedeckých konferenciách

- AFC01 BARTOŠOVÁ, Nina - DULLA, Matúš - HABERLANDOVÁ, Katarína. Industrial Architecture In Bratislava – Linking The Past To The Present. In SGEM Conference on Arts, Performing arts, Architecture and Design : proceedings. - Sofia : STEF92 Technology Ltd., 2014, p. 747-754. ISBN 978-619-7105-30-8. ISSN 2367-5659. (International Multidisciplinary Scientific Conferences on Social Sciences and Arts (SGEM 2014))

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1. [1.1] ABDULLAYEVA, N. - BAKIROVA, T. - RAHMANOVA, A. Town-planning

Organization of the Baku Industrial Region: 19th-20th Centuries. In PROBLEMY EKOROZWOJU. ISSN 1895-6912, 2020, vol. 15, no. 2, p. 223-234., Registrované v: WOS

AFC02

DARULA, Stanislav - KITTLER, Richard. CIE General Sky standard defining luminance distributions. In Proceeding Conference eSim 2002. The Canadian conference on building energy simulation : september 11th - 13th, 2002, Montreal. Dostupné na internete:

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1. [1.1] DOLIN, L. S. - TURLAEV, D. G. Polarization method for imaging through the water surface. In *APPLIED OPTICS*. ISSN 1559-128X, 2020, vol. 59, no. 19, p. 5772-5778., Registrované v: WOS

2. [1.1] KHAN, N. A. - MALIK, P. - BHATTACHARJEE, B. Identifying the design skies for Indian tropical climatic conditions. In *CURRENT SCIENCE*. ISSN 0011-3891, 2020, vol. 119, no. 3, p. 473-484., Registrované v: WOS

3. [1.1] LEE, J. W. - KANG, W. H. - MOON, T. - HWANG, I. - KIM, D. - SON, J. E. Estimating the leaf area index of bell peppers according to growth stage using ray-tracing simulation and a long short-term memory algorithm. In *HORTICULTURE ENVIRONMENT AND BIOTECHNOLOGY*. ISSN 2211-3452, 2020, vol. 61, no. 2, p. 255-265., Registrované v: WOS

4. [1.1] YUN, S. I. - KIM, H. R. - PARK, D. Y. - JEONG, J. W. Sensor minimization method for integrated daylighting control by a mathematical approach. In *ENERGY AND BUILDINGS*. ISSN 0378-7788, 2020, vol. 214, art. no. 109891., Registrované v: WOS

AFC03

JANOTKA, Ivan - KRAJČI, Ľudovít. Utilization of natural zeolite in portland pozzolan cement of increased sulfate resistance. In Proceedings of the 5th CANMET/ACI International Conference on Durability of Concrete. - Barcelona, 2000, vol. 1, P. 223-236.

Citácie:

1. [1.1] PEZESHKIAN, M. - DELNAVAZ, A. - DELNAVAZ, M. Effect of Natural Zeolite on Mechanical Properties and Autogenous Shrinkage of Ultrahigh-Performance Concrete. In *JOURNAL OF MATERIALS IN CIVIL ENGINEERING*. ISSN 0899-1561, 2020, vol. 32, no. 5, art. no. 04020093., Registrované v: WOS

AFC04

KITTLER, Richard - PEREZ, Richard - DARULA, Stanislav. A new generation of sky standard. In Proceedings of the Lux Europa Conference. - Amsterdam, 1997, p. 359-373.

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1. [1.1] ALSHAIBANI, K. - LI, D. - AGHIMIEN, E. Sky Luminance Distribution Models: A Comparison with Measurements from a Maritime Desert Region. In *ENERGIES*, 2020, vol. 13, no. 20, art. no. 5455., Registrované v: WOS

2. [1.1] GARCIA, I. - DE BLAS, M. - LUIS TORRES, J. - HERNANDEZ, B. - SAENZ, C. - ORMAZABAL, M. Evaluation of Two Procedures for Selecting the CIE Standard Sky Type Using High Dynamic Range Images. In *PROCEEDINGS OF THE ISES SOLAR WORLD CONFERENCE 2019 AND THE IEA SHC SOLAR HEATING AND COOLING CONFERENCE FOR BUILDINGS AND INDUSTRY 2019*, 2019, p. 1883-1893., Registrované v: WOS

3. [1.1] GARCIA, I. - DE BLAS, M. - LUIS TORRES, J. The sky characterization according to the CIE Standard General Sky: Comparative analysis of three classification methods. In *SOLAR ENERGY*. ISSN 0038-092X, 2020, vol. 196, p. 468-483., Registrované v: WOS

4. [1.1] GARCIA-RODRIGUEZ, A. - GARCIA-RODRIGUEZ, S. - DIEZ-MEDIAVILLA, M. - ALONSO-TRISTAN, C. *Photosynthetic Active Radiation, Solar Irradiance and the CIE Standard Sky Classification*. In *APPLIED SCIENCES-BASEL*, 2020, vol. 10, no. 22, art. no. 8007., Registrované v: WOS
5. [1.1] HONGKONG, S. - JAMRADLOEDLUK, J. *A technique for evaluation of sky luminance distribution in tropical climate: a case study of Northeastern Thailand*. In *INTERNATIONAL JOURNAL OF SUSTAINABLE ENERGY*. ISSN 1478-6451, 2020, vol. 39, no. 2, p. 176-189., Registrované v: WOS
6. [1.1] KOBAY, M. B. - DUMORTIER, D. - BIZJAK, G. *Defining the minimum density of a sky luminance grid based on scale model measurements without the sun*. In *BUILDING AND ENVIRONMENT*. ISSN 0360-1323, 2020, vol. 169, art. no. 106562., Registrované v: WOS
7. [1.1] SUAREZ-GARCIA, A. - DIEZ-MEDIAVILLA, M. - GRANADOS-LOPEZ, D. - GONZALEZ-PENA, D. - ALONSO-TRISTAN, C. *Benchmarking of meteorological indices for sky cloudiness classification*. In *SOLAR ENERGY*. ISSN 0038-092X, 2020, vol. 195, p. 499-513., Registrované v: WOS

AGI Správy o vyriešených vedeckovýskumných úlohách

- AGI01 KINZEY, Bruce - PERRIN, Tess E. - MILLER, Naomi J. - KOCIFAJ, Miroslav - AUBÉ, Martin - SOLANO LAMPHAR, H. A. *An Investigation of LED Street Lighting's Impact on Sky Glow*. Richland, Washington : Pacific Northwest National Laboratory, 2017. 38 p. Dostupné na internete:

https://energy.gov/sites/prod/files/2017/05/f34/2017_led-impact-sky-glow.pdf

Citácie:

1. [1.1] LAO, S. - ROBERTSON, B. A. - ANDERSON, A. W. - BLAIR, R. B. - ECKLES, J. W. - TURNER, R. J. - LOSS, S. R. *The influence of artificial light at night and polarized light on bird-building collisions*. In *BIOLOGICAL CONSERVATION*. ISSN 0006-3207, 2020, vol. 241, art. no. 108358., Registrované v: WOS
2. [1.1] LEVIN, N. - KYBA, C. C. M. - ZHANG, Q. L. - DE MIGUEL, A. S. - ROMAN, M. O. - LI, X. - PORTNOV, B. A. - MOLTHAN, A. L. - JECHOW, A. - MILLER, Steven D. - WANG, Z. - SHRESTHA, R. M. - ELVIDGE, C. D. *Remote sensing of night lights: A review and an outlook for the future*. In *REMOTE SENSING OF ENVIRONMENT*. ISSN 0034-4257, 2020, vol. 237, art. no. 111443., Registrované v: WOS

BAB Odborné knižné publikácie vydané v domácich vydavateľstvách

- BAB01 KITTLER, Richard - DARULA, Stanislav - PEREZ, Richard. *A set of standard skies characterising daylight conditions for computer and energy conscious design*. Bratislava : Polygrafia SAV, 1998. 52 p.

Citácie:

1. [1.1] GARCIA, I. - DE BLAS, M. - LUIS TORRES, J. - HERNANDEZ, B. - SAENZ, C. - ORMAZABAL, M. *Evaluation of Two Procedures for Selecting the CIE Standard Sky Type Using High Dynamic Range Images*. In *PROCEEDINGS OF THE ISES SOLAR WORLD CONFERENCE 2019 AND THE IEA SHC SOLAR HEATING AND COOLING CONFERENCE FOR BUILDINGS AND INDUSTRY 2019*, 2019, p. 1883-1893., Registrované v: WOS
2. [1.1] GARCIA, I. - DE BLAS, M. - LUIS TORRES, J. *The sky characterization according to the CIE Standard General Sky: Comparative analysis of three classification methods*. In *SOLAR ENERGY*. ISSN 0038-092X, 2020, vol. 196, p.

468-483., Registrované v: WOS

3. [1.1] MOON, J. W. - BAIK, Y. K. - KIM, S. Y. Operation guidelines for daylight dimming control systems in an office with lightshelf configurations. In *BUILDING AND ENVIRONMENT*. ISSN 0360-1323, 2020, vol. 180, art. no. 106968., Registrované v: WOS

4. [1.1] ZI, Y. - SUN, C. - HAN, Y. S. Sky type classification in Harbin during winter. In *JOURNAL OF ASIAN ARCHITECTURE AND BUILDING ENGINEERING*. ISSN 1346-7581, 2020, vol. 19, no. 5, p. 515-526., Registrované v: WOS

Údaje o pedagogickej činnosti organizácie

Semestrálne prednášky:

doc. Ing. Stanislav Darula, CSc.

Názov semestr. predmetu: Building Physics - Daylighting

Počet hodín za semester: 8

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Katedra konštrukcií pozemných stavieb

Ing. Peter Matiašovský, CSc.

Názov semestr. predmetu: Metodológia vedeckého experimentu

Počet hodín za semester: 4

Názov katedry a vysokej školy: Stavebná fakulta STU, Katedra konštrukcií pozemných stavieb

Prof.Dr.Ing. Martin-Tchingnabé Palou

Názov semestr. predmetu: Building Materials

Počet hodín za semester: 24

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Katedra materiálového inžinierstva a stavebnej fyziky

Prof.Dr.Ing. Martin-Tchingnabé Palou

Názov semestr. predmetu: Priemyselná anorganická chémia

Počet hodín za semester: 24

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Ústav anorganickej chémie, technológie a materiálov

Prof.Dr.Ing. Martin-Tchingnabé Palou

Názov semestr. predmetu: Procesy a zariadenia silikátového priemyslu

Počet hodín za semester: 24

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Ústav anorganickej chémie, technológie a materiálov

Prof.Dr.Ing. Martin-Tchingnabé Palou

Názov semestr. predmetu: Špeciálna technológia anorganických materiálov

Počet hodín za semester: 24

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Ústav anorganickej chémie, technológie a materiálov

Semestrálne cvičenia:

Semináre:

Terénne cvičenia:

Individuálne prednášky:

doc. Ing. Stanislav Darula, CSc.

Názov semestr. predmetu: -

Počet hodín za semester: 2

Názov katedry a vysokej školy: Slovenská technická univerzita v Bratislave, Ústav architektúry obytných budov

doc. Ing. Stanislav Darula, CSc.

Názov semestr. predmetu: Osvetľovací technika

Počet hodín za semester: 2

Názov katedry a vysokej školy: Vysoké učení technické, Brno, FEKT

Ing. Michal Slaný, PhD.

Názov semestr. predmetu: Metódy charakterizácie anorganických látok a materiálov

Počet hodín za semester: 4

Názov katedry a vysokej školy: Prírodovedecká fakulta UK, Anorganická chémia

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

Krajina	D r u h d o h o d y					
	MAD, KD, VTS		Medziústavná		Ostatné	
	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní	Meno pracovníka	Počet dní
					Darula S.	3
Počet vyslaní spolu	0	0	0	0	1	3

(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
	Prof. Dr. Phongthorn Julphunthong	49				
	Pithiwat Tiantong	84				
Počet prijatí spolu	2	133	0	0	0	0

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

Krajina	Názov konferencie	Meno pracovníka	Počet dní
ČR	Thermophysics 2021	Peter Matiašovský	3
ČR	XIV. ročník odborného semináře: Kvalita cementu 2021	Martin T. Palou	2
ČR	International Conference Building Materials, Products and Technologies.	Martin T. Palou	3
ČR	International Conference Building Materials, Products and Technologies	Jana Čepčianska	3
Spolu			11

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

Skratky použité v tabuľke C:

Príloha F**Vedecko-popularizačná činnosť pracovníkov organizácie SAV**

Meno	Spoluautori	Typ¹	Názov	Miesto zverejnenia	Dátum alebo počet za rok
doc. Ing. Stanislav Darula, CSc.		PB	Hodnotenie energetickej hospodárnosti osvetlenia v budovách v zmysle aktuálnych predpisov	SKSI Bratislava	2021
doc. Ing. Stanislav Darula, CSc.		PB	Inovačný kurz HYGIENA OSVĚTLOVÁNÍ	KHS Brno	2021
doc. Ing. Stanislav Darula, CSc.		PB	Navrhujeme a stavíme budovy s takmer nulovou potrebou energie	SKSI Trenčín	2021
Mgr. Miroslav Kocifaj, PhD.		IN	Metóda na zmiernenie dosahov svetelného znečistenia	https://www.teraz.sk/veda/vedci-zo-sav-vyvinuli-metodu-na-zmiernenie/522419-clanok.html	23.1.2021
Mgr. Miroslav Kocifaj, PhD.		IN	SAS scientists have developed a method to mitigate the effects of light pollution	https://tekdeeps.com/sas-scientists-have-developed-a-method-to-mitigate-the-effects-of-light-pollution-human-science-and-technology/	25.1.2021
Mgr. Miroslav Kocifaj, PhD.		IN	Významné výsledky štúdie o svetelnom znečistení zaujali prestížny časopis Science	https://www.sav.sk/?lang=sk&doc=services-news&source_no=20&news_no=9488	29.3.2021
Mgr. Miroslav Kocifaj, PhD.	Andrew Grant (autor), Kocifaj (podklady)	TL	Cleaner air could darken the night sky	https://physicstoday.scitation.org/doi/10.1063/PT.6.1.20210729a/full/	29.7.2021
Mgr. Miroslav Kocifaj, PhD.	Barentine (interview), Kocifaj, Bará, Kundracik	TV	BBC Two Newsnight appearance	https://www.johnbarentine.com/media/bbc-two-newsnight-appearance-31-march-2021	31.3.2021
Mgr. Miroslav Kocifaj, PhD.	International Dark-Sky Association, Kocifaj (podklady)	IN	New Study Finds Satellites Contribute Significant Light Pollution To Night Skies	https://www.darksky.org/new-satellite-study/	28.3.2021
Mgr. Miroslav Kocifaj, PhD.	J. Barentine (USA), M. Kocifaj (SK)	IN	New Study Finds Satellites Contribute Significant Light Pollution To Night Skies	https://www.darksky.org/new-satellite-study/	28.3.2021
Mgr. Miroslav Kocifaj, PhD.	Joshua Sokol (redaktor), Barentine a Kocifaj	IN	Study finds nowhere on Earth is safe from satellite light pollution	https://www.science.org/content/article/study-finds-nowhere-earth-safe-satellite-light-pollut	28.3.2021

	(podklady)			ion	
Mgr. Miroslav Kocifaj, PhD.	Kocifaj (podklady)	IN	Bez aerosólov v ovzduší je nočná obloha tmavšia	https://vat.pravda.sk/vesmír/clanok/598040-bez-aerosolov-v-ovzduši-je-nocna-obloha-tmavšia/	20.8.2021
Mgr. Miroslav Kocifaj, PhD.	Kocifaj a Barentine (podklady)	IN	Satellites contribute significant light pollution to night skies	https://ras.ac.uk/news-and-press/news/satellites-contribute-significant-light-pollution-night-skies	29.3.2021
Mgr. Miroslav Kocifaj, PhD.	Kocifaj a Kundracik (podklady)	IN	Pre satelity vidíme horšie na hviezdy	https://uniba.sk/detail-aktuality/back_to_page/spravodajsky-portal/article/pre-satelity-vidime-horsie-na-hviezdy/	26.4.2021
Mgr. Miroslav Kocifaj, PhD.	Kundracik a Kocifaj (podklady)	IN	Štúdia poukázala na narastajúci vplyv satelitov a kozmického odpadu na úroveň svetelného znečistenia	https://fmph.uniba.sk/detail-novinky/back_to_page/fakulta-matematiky-fyziky-a-informatiky-uk/article/studia-poukazala-na-narastajuci-vplyv-satelitov-a	31.3.2021
Mgr. Miroslav Kocifaj, PhD.	The Telegraph (UK), Kocifaj a Barentine (podklady)	IN	Satellite mega constellations making night skies 10pc brighter	https://www.telegraph.co.uk/technology/2021/03/30/satellite-mega-constellations-making-night-skies-10pc-brighter/	30.3.2021
RNDr. Ladislav Kómar, PhD.		PB	Prečo zas nevidíme hviezdy	SOLAR, Hvezdáreň Senec	11.8.2021
RNDr. Ladislav Kómar, PhD.	Jaromír Petržala	TL	Problém, ktorý vieme vypočítať	časopis Quark 2/2021	15.2.2021
Prof.Dr.Ing. Martin-Tchingnabé Palou		RO	Priesečníky	https://www.rtv.slovakia.sk/archiv/1198/1623735?fbclid=IwAR3CXFXI85dnHzMPFHqkjBiEkvdohlcPQoiBRTAnuvIMkDsZz0IxEfXwnYw	16.7.2021
Prof.Dr.Ing. Martin-Tchingnabé Palou		PB	Veda v centre	https://www.youtube.com/watch?v=Tf2rDyy4sZg	29.4.2021
Prof.Dr.Ing. Martin-Tchingnabé Palou		IN	Vedecký podcast 27	https://www.youtube.com/watch?v=IDQPTkQxro0	26.11.2021
Ing. Janette Podhorská		IN	Prezentačné video USTARCH SAV	https://www.youtube.com/watch?v=3xy_oI1LK8M	25.10.2021
Ing. Janette Podhorská		RO	Týždeň vedy a techniky	https://reginazapad.rtv.slovakia.sk	10.11.2021

Ing. Janette Podhorská		IN	Veda v divadle IX	https://www.youtube.com/watch?v=CLH4ktAGMRg	27.10.2021
Ing. Janette Podhorská	Ladislav Kómar, Ladislav Sátor, Stanislav Darula, Jana Čepčianska	EX	Deň otvorených dverí USTARCH SAV	https://www.tyzdenvedy.sk	11.11.2021
Prof. Ing. Ján Sládek, DrSc.		RO	VedaSk	RTVS Bratislava	18.9.2021
Ing. Matúš Žemlička, PhD.		IN	editor internetovej stránky Oddelenia stavebných hmôt a konštrukcií USTARCH SAV	http://www.geomat.sav.sk/	2021
Ing. Janette Podhorská		IN	Vytvorenie stránky na Instagrame	Instagram.com/ustarch.sav/	1
Ing. Janette Podhorská	Ladislav Kómar	IN	Vytvorenie Facebookovej stránky	https://www.facebook.com/USTARCHSAV/?ref=pages_you_manage	1

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