Faculty of Engineering

HORIZON EUROPE Research and Innovation Framework Programme
MARIE SKŁODOWSKA-CURIE ACTIONS

INVITATION TO APPLY FOR
MSCA4Ukraine Fellowship Programme

Organisation Name/ Department	Czech University of Life Sciences Prague/Faculty of Engineering, Department of Material Science and Manufacturing Technology
Website of the organisation	https://www.tf.czu.cz/en https://www.facebook.com/tf.czu.cz https://www.instagram.com/tfczucz/
Research Fields	☐ Chemistry (CHE) ☐ Social Sciences and Humanities (SOC) ☐ Economic Sciences (ECO) ☒ Information Science and Engineering (ENG) ☐ Environment and Geosciences (ENV) ☒ Life Sciences (LIF) ☐ Mathematics (MAT) ☐ Physics (PHY)
Sub-Fields/ Keywords	fiber reinforced composites, prediction of mechanical performance, nanoscale fillers in composites, hybrid adhesive bonds, bio-composites
Marie Skłodowska-Curie Action(s) 4Ukraine	☒ **Postdoctoral Fellowships** (researchers with a possession of a doctoral degree by the time the fellowship is set to begin) Duration: 6-24 months ☒ **Doctoral Candidates** (enrolled in a doctoral programme at a higher education institution in Ukraine, leading to the award of a doctoral degree) Duration: 6-24 months

Short Description of the Organisation/ Department	**DESCRIPTION OF THE ORGANISATION/ DEPARTMENT:** **Expertise:** The department of Material Science and Manufacturing Technology is well equipped with state-of-the-art machinery and equipment for development, testing, microscopy and characterization of fiber reinforced composites. Further, the computational tools for modeling and prediction of mechanical performance are also available. The research team is highly experienced in this area and has recently participated in many significant research projects. **Research team composition:** 1. DOC. RAJESH KUMAR MISHRA, PH.D. (CZU, CZ) - ORCID 0000-0001-8505-4443 2. PROF. ING. MIROSLAV MULLER, PH.D. (CZU, CZ) - ORCID 0000-0002-3460-4254 3. ING. MONIKA HROMASOVÁ, PH.D. (CZU, CZ) - ORCID 0000-0001-5849-1955 4. ING. VIKTOR KOLAR, PH.D. (CZU, CZ) - ORCID 0000-0002-6333-2243 5. DOC. ING. MICHAL PETRU, PH.D. (TUL, CZ) - ORCID 0000-0002-7643-8450 6. PROF. BIJOYA KUMAR BEHERA, PH.D. (IIT DELHI, IND) - ORCID 0000-0001-7674-3693 7. PROF. PRASAD POTLURI, PH.D. (MANCHESTER, UK) - ORCID - 0000-0002-2306-1661 **Strengths and scientific achievements:** ✓ Publication of numerous articles in reputed scientific journals e.g.: Composites B, Polymers, Journal of Natural Fibers, Journal of Industrial Textile, Wear, Tribology International, etc. ✓ Product prototypes used in related industries especially in automotive, agricultural, defence, construction fields. **Important infrastructure:** ✓ mechanical testing and evaluation under tensile, bending, compression, impact mode ✓ scanning electron microscopy ✓ nanoscale mechanical evaluation ✓ tribology, vacuum infusion ✓ granulation line ✓ plastic injection moulding, hardness measuring ✓ temperature and degradation chambers

	✓ CNC cutting by water jet technology ✓ particle analyser
Previous Projects/ Research Experience	1. Hybrid Materials for Hierarchical Structures (HyHi, Reg. No. CZ.02.1.01/0.0/0.0/16_019/0000843), Ministry of Education, Youth and Sports, Czech Republic. 2. Modular platform for autonomous chassis of specialized electric vehicles for freight and equipment transportation", Reg. No. CZ.02.1.01/0.0/0.0 /16_025/0007293, Ministry of Education, Youth and Sports, Czech Republic. 3. Research services, design, development & supply of advanced insulation materials, DEBEL/MMG/PO/FE/DEB-110/03/2013-14, Ministry of defence, Govt. of India. 4. Development of prototype of alcohol-fuelled LTAIN19029, MSMT, INTER-EXCELLENCE CR-Indie 5. R&D of working tools of agricultural machines, TA04021078, Technology Agency of the Czech Republic 6. Research and development of wear-resistant materials and technologies for their use at agricultural machines TA01010192, Technology Agency of the Czech Republic
Thematic areas and a list of supervisors who are going to participate in preparing a project proposal with researchers.	**Thematic area:** Development and characterization of fibrous geometries for composite reinforcement: computational modeling and experimental validation **Supervisor:** **doc. Rajesh Kumar Mishra, Ph.D.** • **Current position:** docent (Associate professor) • **Professional profile:** ✓ Number of published papers: 185 ✓ *Hirsch index – Web of Science (25), Scopus (28)* ✓ *Membership of a scientific org./boards – Member of textile bioengineering and informatics society, Institute of Engineers (India), Textile Institute (Manchester).* ✓ *Awards – Outstanding young researcher award from textile bioengineering and informatics society - 2019* ✓ *Number of promoted PhD students etc.*- 5 (successfully defended theses), 1 continuing

	• **Professional experience:** ✓ *2019- present – Associate professor (docent) at Faculty of Engineering, Czech university of Life Sciences Prague.* ✓ *2013 - 2019 - Associate professor (docent), Technical University of Liberec, Faculty of Textile Engineering* ✓ *2009 - 2013- Assistant professor, Technical University of Liberec, Faculty of Textile Engineering* ✓ *2006 - 2009 – Research & Development Manager in Indian Textile Industry* ✓ *2003 - 2006 – Research Fellow at IIT Delhi* ✓ *1998 - 2003- Lecturer in Textile Engineering at Utkal University, INDIA* • **Titles and education:** ✓ *2013 - docent, habilitation in textile technics and material engineering from Technical University of Liberec, Czech Republic.* ✓ *2006 - PhD with thesis titled "High quality woven fabric design engineering" from IIT, Delhi, India.* ✓ *1998 - B.Tech. from Textile faculty in Utkal University, India.* **Specialization:** *Fiber reinforced composites, green composites, biological fillers for composites, nanocomposites, biomechanical engineering of fibrous structures, thermo-mechanical characterization of materials, thermal behavior of textile structures etc.*
Short description of the Fellowships programme	✓ The activities of the fellow will be focused on fiber reinforced composite materials. ✓ Computational tools e.g. FEM or FVM will be used to define the geometry of fiber based reinforcement structures. ✓ The mechanical performance with respect to maximum stress and strain levels will be predicted. ✓ The adhesive bonds and interfacial performance will be evaluated experimentally. ✓ Scanning electron microscopy will be used to analyze the internal structure and fracture in composite samples. ✓ Mechanical characterization of composite samples with respect to tensile, bending, compression and impact performance will be carried out. ✓ Cyclic loading behaviour will be investigated for developed samples. ✓ The study of degradation under varying conditions will be conducted.

	✓ The thermomechanical performance will be studied using Dynamic mechanical analysis (DMA) and thermogravimetric analysis (TGA). ✓ Inclusion of nanoscale fillers in composites will be studied in detail. ✓ Possibilities of using bio-based fibers and fillers in hybrid composites will be explored. ✓ The researcher will be actively involved in modeling, sample development, characterization and evaluation of results. ✓ Preparation of articles for publication in reputed scientific journals.
Contact Person/ Position in the Organisation/ Phone/ E-mail	Pavlina Ruzickova project manager email: ruzickova@tf.czu.cz phone: + 420 605 294 906
Deadline for Expressions of Interest	**30 November 2022**
Necessary documents from applicants	Please send us an application by email to ruzickova@tf.czu.cz including following documents: ✓ **CV** ✓ **List of publications** ✓ **Brief description of the project idea** (see the template here) (a *project proposal will be made jointly by the researcher and a host institution*)
What we offer	✓ **Full-time contract to work** on a research project and enjoy advanced training, ✓ **Competitive salary** – rates in line with MSCA Doctoral Networks and MSCA Postdoctoral Fellowships reduced by country correction coefficient 79,1 % ✓ **Mobility and Family allowances** (if applicable); ✓ **Budget for Research, Training and Networking costs**; ✓ **Special needs allowance** (if applicable). ✓ HR Excellence in Research Award, granted by European Commission for **transparent educational and scientific research environment**
Eligibility of Applicants	✓ **For Postdoctoral Fellowships** - applicants should be in a possession of a doctoral degree by the time the fellowship is set to begin. ✓ **For Doctoral candidates** – applicants should be enrolled in a doctoral programme at a higher education institution in Ukraine, leading to the award of a doctoral degree ✓ **Applicants should be** (a) (1) **Ukrainian nationals**, or (2) stateless persons, or nationals from third countries other than Ukraine, **with their primary residence in Ukraine on 24 February 2022**; (b) either (1) have been

	displaced on or after 24 February 2022, or (2) are ready to be displaced from Ukraine ✓ **Applicants should have the language skills** required to successfully conduct their research activities at the envisaged host institution – English, Czech or Slovak at the communicative level