

## PROJECT PARTNER SEARCH FORM

I offer my expertise to participate as a Partner in a Horizon Europe Project

I am planning to coordinate a project and I am looking for Project Partners

### TOPICS OF INTEREST

**HORIZON-CL4-2021-RESILIENCE-01-12: Safe- and sustainable-by-design metallic coatings and engineered surfaces (RIA)**

### PARTNER INFORMATION

Institute of Materials and Machine Mechanics of Slovak Academy of Sciences (IMSAS) would like to join the consortium as a Project partner / Work Package Leader / Task Leader to contribute to the call as mentioned above.

IMSAS provides a **complete microstructural and chemical analysis** of the coatings using high-end equipment, including XRD, FE-SEM equipped by EDS, WDS, EBSD, and HR-STEM (EELS, STEM mode, EDS) as well as thermo-mechanical properties measurement (TGA, DTA). Together with Faculty of Mathematics, Physics, and Informatics of Comenius University in Bratislava (FMPI CU) we can offer deposition of coatings by environmentally friendly physical deposition technologies such as **magnetron sputtering and its progressive modifications HiTUS and HiPPMS**. By the mentioned methods, it is possible to prepare **metallic and ceramics-based coatings** (transition metals nitrides and diborides) with excellent mechanical properties such as high hardness, wear resistance, corrosion resistance, low coefficient of friction in various atmospheres etc. We can also offer the **mechanical and tribological testing** of the prepared coatings and **modelling material systems** using ab initio DFT calculations, specifically the prediction of formation energies, phase transformations and decomposition mechanisms of solid solutions.

#### Description of the Legal Entity

Institute of Materials and Machine Mechanics of Slovak Academy of Sciences (IMSAS) is a research institute founded by the Slovak Academy of Sciences in 1953. Traditionally, the IMSAS is focused on the research and development of new advanced materials based on non-ferrous metals and solving a wide range of related issues - from the development of unique technology of new materials, through exploring and characterising their internal structure, to the analytical and numerical modelling a simulation of the properties.

IMMS has successfully implemented over 20 EU funded projects (FP5 – H2020, COST, Interreg) and over 80 national research projects. IMMS also provides excellent research owning 20 patents, over 45 publications published worldwide in 2020, over 752 highly impacted CC publications and more than 5400 citations since its establishment. IMSAS team consists of 36 researchers, 12 researcher assistants, 12 members of administration support and 15 technicians and other employees. We constantly seek new collaboration opportunities, especially in Horizon Europe, to strengthen the position of the IMSAS in the international level. IMSAS cooperates closely with companies in Slovakia, Germany, France, and Austria in the field of material development, microstructural observation, and mechanical testing. Some of the cooperation leads to the successful research projects. Besides highly qualified staff, IMSAS provides various technological devices and testing methods.

Higher Education

Research Institution

Public Administration

Industry /SME

NGO

Other: *Please specify*

### **Expertise of the Team Leader**

**Martin Nosko, (M, 41)** is director of IMSAS. He has PhD in Material science and Physical metallurgy. He has 17+ years of work experience in research projects. He participated and still participates as a principal investigator or research team member of more than 27 national and international research projects focused on basic research, applied research and development in materials science and its characterization. His participation in industrial projects is extensive both on the national and international levels. He is the author or co-author of more than 56 CC (Current Content) publications.

### **Description of the (Research) Team**

**Nad'a Beronská, (F, 40)** is a Head of Division of microstructure of surfaces and interfaces. She has PhD in Material Science and Physical metallurgy focused on research and characterization of microstructure and thermophysical properties of metal matrix composite materials. She has 15+ years' work experiences with characterization of microstructure surfaces and interfaces in the field of electron microscopy and thermal analysis (DTA, TG, dilatometry measurements). She participated on 3 projects of 6th and 7th FP EU, more than 12 national and international research and industrial projects focused on basic research, applied research and development in materials. She is the author or co-author more than 20 CC (Current Content) publications.

**Lubomír Orovčík, (M, 35)** is Head of Scanning electron microscopy lab. He has PhD in Material science and Physical metallurgy focused on Heat treatment of aluminium alloys. He has 10+ years of work experience in research projects as researcher in characterization of different organic and anorganic materials. He participated and still participates as research team member of more than 10 national and international research projects focused on basic research, applied research and development in materials science and its characterization. He is the author or co-author of more than 45 CC (Current Content) publications.

**Stefan Nagy, (M, 36)** is a researcher of IMSAS. He has 9 years of work experience in research projects and electron microscopy. His research experience is in the field of composite metal materials, interface characterization, and thin films. In the mentioned fields he uses different techniques of electron microscopy (SEM, TEM, SAED, HRSTEM, HR-EDS) for the microstructural characterization of materials down to the atomic level. He is participated as investigator or research team member of 11 national and international research projects focused on basic research, applied research and interdisciplinary research. He is the author or co-author of more than 22 CC (Current Content) publications.

**Marian Mikula, (M, 42)** is an independent researcher at IMSAS and associate professor in physics at FMPI CU. He is an expert in HiPPMS and HiTUS technologies and nanoindentation and tribological measurements of the hard coatings. He also participates in the development of films with an argyrodite structure for supercapacitors. He participated and still participate as a principal investigator or research member in 13 national and international research projects. He has published 35 scientific articles in foreign CC journals and presented the experimental results of his work at many international conferences, including as an invited speaker. He acts as a referee of several CC journals (Surface Coatings and Technology, J. of Alloy and Compounds, J. of Vacuum Science and Technology A, Materials and Design, Thin Solid Films, and others).

**Branislav Grančič, (M, 43)** is independent researcher at FMPI CU. He defended his dissertation thesis in the field of hard PVD coatings. He spent a year at a post-doctoral post at the University of Delft in the Netherlands. He has extensive experience with thin film deposition and with analytical methods such as GDOES, XRD, ED /WDS. He presented his results in 35 foreign CC journals and many conference papers. The citation response to his work in WoS and Scopus is more than 270. In addition, he successfully led several bachelor and master theses and one PhD thesis.

<https://eraportal.sk/horizont-europa/>

**Martin Truchlý, (M 35)** is independent researcher (up to 35 years). He is an expert in measuring mechanical and tribological properties of thin films, profilometry and atomic force microscopy. He also deals with the preparation of films with HiTUS technology and magnetron sputtering. He is the author and co-author of 25 CC publications and many foreign conference papers. The citation for his work in WoS and Scopus is about 200.

**Potential role in the project**

- Research  Training  
 Dissemination  Other: workpackage leader, task leader

e.g. project leader, scientific coordinator, workpackage leader, product development expertise.

Already experience as a	Coordinator	<input type="checkbox"/> YES	<input type="checkbox"/> NO
	Partner	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
	Expert Evaluator	<input type="checkbox"/> YES	<input type="checkbox"/> NO
<b>CONTACT DETAILS</b>			

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Date: 17/07/2021

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