



**Skoltech**

**Event Location**

Skolkovo Institute of Science and Technology

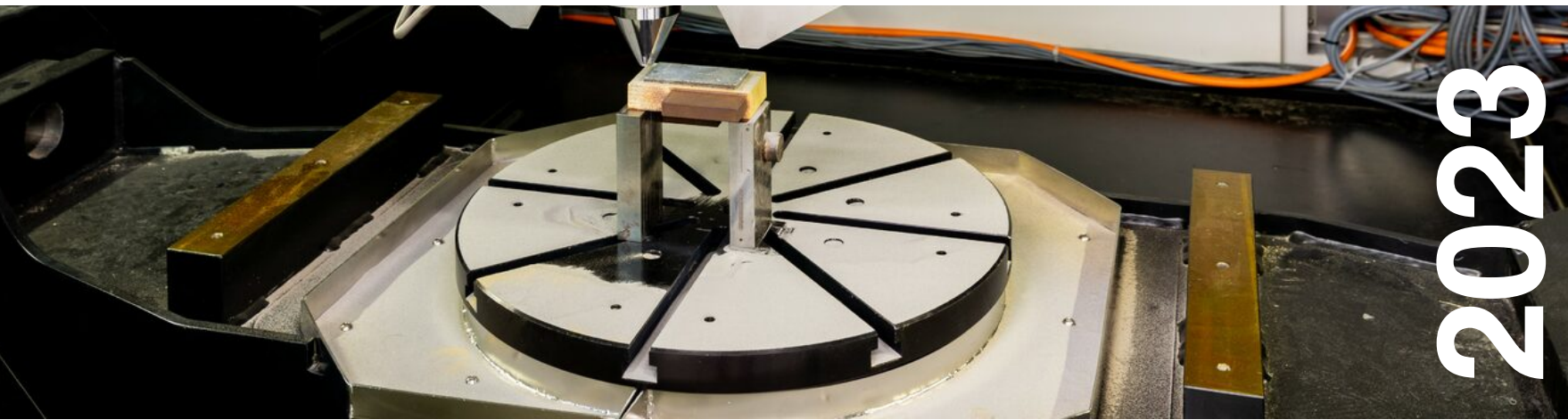
30c1 Bolshoi boulevard, Skolkovo, 121205

Russian Federation

# The 3rd International Workshop of Advanced Manufacturing Technologies

April 18-19, 2023

Hybrid event | | E-B4-3006



**2023**

**Skoltech**  
Materials

Center for  
Materials  
Technologies

# WELCOME

to “The 3rd International Workshop of Advanced Manufacturing Technologies” organized by the Center for Materials Technologies of the Skolkovo Institute of Science and Technology to enhance scientific networking and cooperation.

The Center for Materials Technologies is founded to develop a shortest path from fundamentals in mechanics and physics to industrial applications with particular focus on materials and novel technologies. Our mission is to educate students, create knowledge and solutions for high-tech companies and start-ups supporting overall Skoltech concept as an institute of development. The Center is about four the most important directions in the field of Materials Technologies: Polymer Composite Materials, Thermal Spray and Functional Coatings, Additive Technologies, and Multiscale Testing and Simulation of Advanced materials and Structures.

# PROGRAM

April, 18

9.30 - 10.00 Welcome coffee E-B4-3006

10.00 - 10.30 Opening session Join via [link](#)

## Session 1 Industrial practice for Advanced Manufacturing Technologies. Moderator: Ivan Sergeichev

10.30 - 10.50 Additive manufacturing technologies: cases review. Advantages and limitations **Andrey Beriukhov**, Head of Additive Manufacturing, Coatings Horizon, Moscow, Russia

10.50 - 11.10 *Online.* 3D printing of fiber reinforced polymer composites: technologies review **Fedor Antonov**, CEO, Anisoprint, Bremen, Germany

11.10 - 11.30 3D printed heat exchangers for aircraft propulsion systems **Alexey Mikhaylov**, Senior Research Scientist, Research Institute «Electrotechnical complexes and systems», Advanced Engineering School «Motors of the Future», Ufa University of Science and Technology, Ufa, Russia

## Session 2 Experimental studies. Moderator: Stanislav Evlashin

11.30 - 11.50 *Online.* Laser metal deposition of bimetallic products **Olga Klimova**, Professor, Head of Materials Research Department, Institute of Laser and Welding Technologies, Saint Petersburg State Marine Technical University (SMTU), Saint Petersburg, Russia

11.50 - 12.10 Selective laser melting of materials based on amorphous phases of metals **Andrey Gusarov**, Leading Research Scientist, Laboratory of Innovative Additive Technologies, MSTU «STANKIN», Moscow, Russia

## PROGRAM

April, 18

12.10 - 12.30	Effect of polymer matrix on inelastic strain development in PI- and PEI-based composites reinforced with short carbon fibers under low-cyclic fatigue	<b>Alexey Bogdanov</b> , Research Scientist, Tomsk Polytechnic University, Tomsk, Russia
12.30 - 12.50	Structure and mechanical properties of bainite-martensitic steel produced by direct energy deposition	<b>Ruslan Mendagaliev</b> , Research Scientist, Department of Research and Development of New Materials, SMTU, Saint Petersburg, Russia
13.00 - 14:00	<b>Lunch</b>	
14.00 - 14:20	Multilayer composite materials produced by laser direct energy deposition	<b>Marina Gushina</b> , Leading Engineer of the Materials Research Department, Institute of Laser and Welding Technologies, SMTU, Saint Petersburg, Russia
14.20 - 14.40	Additive manufacturing feasibility of cermet parts by direct energy deposition	<b>Shalnova Svetlana</b> , Research Scientist, Department of Research and Development of New Materials, SMTU, Saint Petersburg, Russia
14.40 - 15:00	<i>Online.</i> Design and selective laser melting of Ni-Ti triply periodic minimal surface lattices for medical applications	<b>Farzad Karimi</b> , Research Scientist, Department of Materials Science and Engineering, Sharif University of Technology, Tehran, Iran
15.00 - 16.00	<b>Lab Tour</b>	
16.00 - 17.00	<b>Workshop.</b> Composite Materials and Structures Lab. Vacuum infusion	
17.00 - 18.00	<b>Workshop.</b> Thermal Spray and Functional Coating Lab. Application of robotics in development of thermal spraying processes	

# PROGRAM

April, 19

9.00 - 9.30 Welcome coffee E-B4-3006 or join via [link](#)

## Session 3 Non-destructive evaluation and microstructural analysis. Moderator: Alexander Safonov

9.30 - 9.50 *Online.* 3D imaging and residual stress analysis in AM Materials

**Giovanni Bruno**, Professor, Head of Division 8.5 Micro Non-Destructive Testing, BAM, Berlin, Germany

9.50 - 10.10 Contact laser-ultrasonic evaluation of CFRC parts

**Alexander Karabutov**, Professor, Department of Physics, M.V.Lomonosov's Moscow State University, Head of Laser Ultrasonics Lab Center of Wave Research, A.M.Prokhorov's General Physics Institute of RAS, Moscow, Russia

10.10 - 10.30 *Online.* Effect of laser shock peening on structure and properties of Ti-6Al-4V

**Sergey Zharebtsov**, Professor, Department of Materials Science and Nanotechnology, BSU, Belgorod, Russia

10.30 - 10.50 Selective laser melting of metastable medium entropy alloy

**Nikita Stepanov**, Senior Research Scientist, Laboratory of Bulk Nanostructured Materials, BSU, Belgorod, Russia

## Session 4 Multiscale modelling. Moderator: Oleg Vasilyev

10.50 - 11.10 Criticality of damage-failure transition in advanced materials in wide range of load intensity

**Oleg Naimark**, Professor, Head of Laboratory of Physical Foundation of Strength of the Institute of Continuous Media Mechanics of the Urals Branch of the Russian Academy of Sciences, Perm, Russia

## PROGRAM

April, 19

11.10 - 11.30	<i>Online.</i> Heat conduction modeling in metal additive manufacturing (Pure thermal model)	<b>Ghader Rezazadeh</b> , Professor, Mechanical Engineering Department, Urmia University, Urmia, Iran
11.30 - 11.50	Strain gradient plasticity modeling to evaluate material plastic deformation behavior in cold gas dynamic spray process	<b>Dmitry Dzhurinsky</b> , Professor, Skoltech, Moscow, Russia
11.50 - 12.10	<i>Online.</i> Numerical modeling of the photopolymerization process for additive manufacturing of ceramics	<b>Daniil Egorov</b> , PhD student, Skoltech, Moscow, Russia
12.10 - 12.30	Molecular dynamics simulations of liquid layer evaporation	<b>Alexey Polikarpov</b> , Professor, Ural Federal University, Yekaterinburg, Russia
12.30 - 12.50	ML application for metal 3D printing optimization	<b>Petr Zhilyaev</b> , Research Scientist, Skoltech, Moscow, Russia
12.50 - 13.10	Organic/inorganic heterostructures for optoelectronics	<b>Dmitry Kvashnin</b> , Leading Research Scientist, Head of the Center for Computer Simulation of Inorganic and Composite Nanoscale Materials, Emanuel Institute of Biochemical Physics, RAS, Moscow, Russia
13.10 - 14.30	<b>Lunch</b>	
14.30 - 15.30	<b>Workshop.</b> Mechanical Testing Lab.	
15.30 - 16.30	<b>Workshop.</b> Additive Manufacturing Lab. Object cloning by 3D scanning and polymer printing	