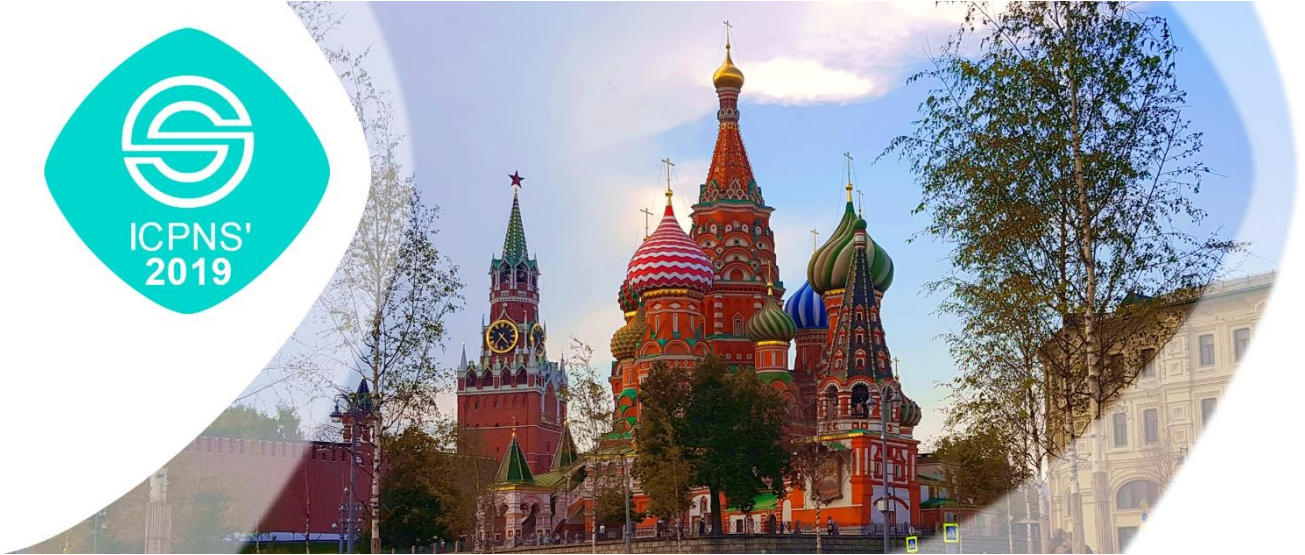


# The 9th International Conference on Physical and Numerical Simulation of Materials Processing

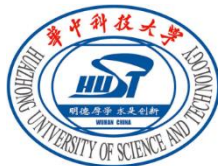


October 10-14, 2019  
Moscow, St.Petersburg, Russia

## Conference Program



NATIONAL RESEARCH  
UNIVERSITY



Gleeble® Thermal-Mechanical Simulators



河南理工大学  
HENAN POLYTECHNIC UNIVERSITY



## CONFERENCE VENUE

All Moscow sessions will be held in HSE Tikhonov Moscow Institute of electronics and Mathematics (MIEM HSE) located at:

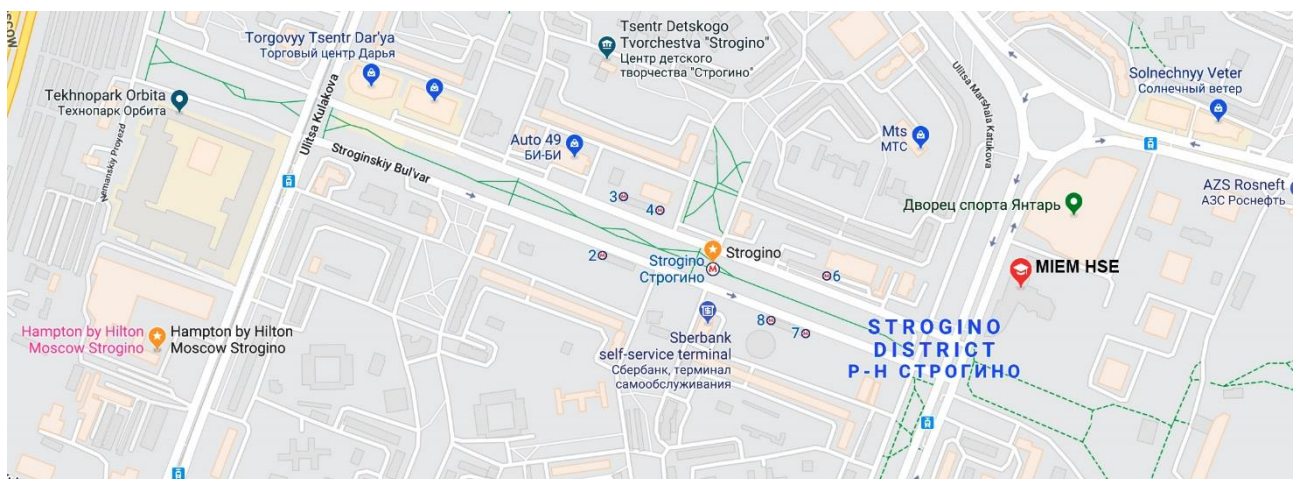
34 Tallinskaya street, 123458 Moscow



How to get there?

**From “Strogino” metro station.** Use the exit closest to last car from the center. After passing the glass doors turn left and go along the pedestrian subway, than turn right and go upstairs. Go straight along the Stroginsky Boulevard (Stroginskiy Bul’var) to the corner of Tallinskaya Street (Ulitsa Tallinskaya). After crossing the street at the crosswalk, you’ll reach the building of MIEM HSE.

**From Hampton by Hilton Moscow Strogino Hotel.** After you exit the hotel area, turn left and go along Kulakova street (Usitsa Kulakova). After crossing the Stroginsky Boulevard (Stroginskiy Bul’var), turn right and go straight along it till the crossroad with Tallinskaya Street (Ulitsa Tallinskaya). After crossing the street at the crosswalk, you’ll reach the building of MIEM HSE.



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October 10	
Arriving of the participants, registration at Hampton by Hilton Strogino Hotel (16:00-20:00)	
October 11	
09:00-09:30	Registration
09:30-09:45	Opening
09:45-11:15	Plenary Talks (Morning Session)
11:15-11:30	Coffee break
11:30-13:00	Plenary Talks (Morning Session)
13:00-14:00	Lunch
14:00-15:30	Plenary Talks (Afternoon Session)
15:30-16:00	Coffee break & Poster Session
16:00-17:00	Plenary Talks (Afternoon Session)
18:00-20:00	Welcome Reception
October 12	
09:30-10:00	Registration
10:00-11:15	Parallel Sections (A11, B11, C11)
11:15-11:45	Coffee break & Poster Session
11:45-13:00	Parallel Sections (A12, B12, C12)
13:00-14:00	Lunch
14:00-14:45	Parallel Sections (A13, B13)
14:45-15:15	Coffee break
15:15-19:00	Conference tour
October 13	
09:30-10:00	Registration
10:00-11:15	Parallel Sections (A21, B21, C21)
11:15-11:45	Coffee break & Poster Session
11:45-13:00	Parallel Sections (A22, B22, C22)
13:00-14:00	Lunch
14:00-15:00	Parallel Sections (A23, B23)
15:00-15:30	Coffee break & Poster Session
15:30-16:30	Meeting of International Federation on Physical and Numerical Simulation of Materials Processing (IFPNS)
16:30-17:30	Transfer to Gala Diner
17:30-21:30	Gala Diner
22:50	Departure to St. Petersburg

October 14	
06:47	Arriving to St. Petersburg
07:00-10:00	Bus tour by the city and breakfast
10:00-13:00	Plenary Session in Peter the Great St. Petersburg Polytechnic University
13:00-14:30	Lunch
14:30-18:00	Excursion program
18:00-21:00	Diner

## OCTOBER 11

Opening		Room 506
09:30-09:45	<p>Welcoming Speeches</p> <p><b>Evgenii Krouk</b>, <i>Academic Supervisor, Director of HSE Tikhonov Moscow Institute of Electronics and Mathematics, National Research University Higher School of Economics</i></p> <p><b>Jitai Niu</b>, <i>Chairman of the International Federation on Physical and Numerical Simulation of Materials Processing</i></p>	
Plenary Talks (Morning Session)		Room 506
Chair: <b>Yangseng Yang</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i>		
09:45-10:30	<p><b>Josip Brnić</b>, <i>University of Rijeka</i></p> <p>Analysis of Materials of Similar Mechanical Behavior and Similar Industrial Assignment</p>	
10:30-11:15	<p><b>Konstantin Arutyunov</b>, <i>National Research University Higher School of Economics</i></p> <p>Superfine Ion Beam Processing of Micro- and NanoStructures</p>	
Coffee break		
11:30-12:15	<p><b>Leonard Wanigasooriya</b>, <i>DSI Company</i></p> <p>Recent Advance of Gleeble Technology and Applications</p>	
12:15-13:00	<p><b>Amir A. Shirzadi</b>, <i>School of Engineering &amp; Innovation, The Open University</i></p> <p>Modelling and design of new stainless steel welding alloys suitable for low-deformation repair and restoration processes</p>	
Plenary Talks (Afternoon Session)		Room 506
Chair: <b>Josip Brnić</b> , <i>University of Rijeka</i>		
14:00-14:30	<p><b>Lin Geng</b>, <i>Harbin Institute of Technology</i></p> <p>Titanium Matrix Composites for High Temperature Application</p>	
14:30-15:00	<p><b>Par Olsson</b>, <i>KTH Royal Institute of Technology</i></p> <p>Coupled theoretical and experimental determination of residual resistivity as a non-destructive materials characterization tool</p>	
15:00-15:30	<p><b>Jer-Ren Yang</b>, <i>National Taiwan University</i></p> <p>Investigation of Ultrahigh-heat-input Weld HAZ in Nb-Ti-B Bearing Steels</p>	
Coffee break		
16:00-16:30	<p><b>Osman Adiguzel</b>, <i>Firat University, Department of Physics</i></p> <p>The Role of Thermomechanical Treatments in Memory Behavior of Shape Memory Alloys</p>	
16:30-17:00	<p><b>Hitoshi Iino</b>, <i>Fuji Electronic Industrial Co., Ltd.</i></p> <p>The New Trend of Equipments for Thermal/Mechanical Simulation of Metal</p>	

**OCTOBER 12 (10:00-11:15)**

Section A11		Room 408
Chair: <b>Lin Geng</b> , <i>Harbin Institute of Technology</i>		
10:00 - 10:15	<b>Alexey Fedorenko</b> , <i>Skolkovo Institute of Science and Technology</i> Failure analysis of composite materials subjected to low-velocity impact	
10:15 - 10:30	<b>Huachen Li</b> , <i>Huaqiao University</i> Numerical simulation of high temperature tensile behavior of boron steel/Q235 laser welded joint by welding with synchronous thermal field	
10:30 - 10:45	<b>Aleksey Kolesnikov</b> , <i>Irkutsk National Research Technical University</i> Simulation of metal forming and casting manufacturing technologies	
10:45 - 11:00	<b>Honggang Zhong</b> , <i>Shanghai University</i> Thermal simulation method and setup for solidification and hot-tearing of steel	
11:00 - 11:15	<b>Rui Zhang</b> , <i>Harbin Institute of Technology</i> The Thermal Compression Behavior and Dynamic Modeling of TiBw/Ti-6Al-2.5Zr-1Mo-1V-0.5Si Composite	
Section B11		Room 410
Chair: <b>Richard Fabík</b> , <i>Liberty Ostrava, a.s.</i>		
10:00 - 10:15	<b>Jong-Ning Aoh</b> , <i>National Chung Cheng University</i> Strip end flip during finishing rolling under misalignment conditions of work roll pair	
10:15 - 10:30	<b>Evgeniy Panin</b> , <i>Karaganda State Industrial University</i> Study of the influence of the main parameters of “rolling-ECAP” process on the stress-strain state and the microstructure evolution using computer simulation	
10:30 - 10:45	<b>Baohui Tian</b> , <i>Voestalpine BOHLER Special Steel</i> Finite Element Simulation of Relative Sliding in Hot Rolling	
10:45 - 11:00	<b>Liwen Zhang</b> , <i>Dalian University of Technology</i> Simulation on Microstructure Evolution of 38CrMoAl Steel Rod During Multi-pass Hot Rolling Process	
11:00 - 11:15	<b>Dmitrii Krivenko</b> , <i>Bauman Moscow State Technical University / QuantorForm</i> Preform shape design of hot metal forging by using QForm software and isothermal surfaces method	
Section C11		Room 412
Chair: <b>Gennady Bondarenko</b> , <i>National Research University Higher School of Economics</i>		
10:00 - 10:15	<b>Pavel Selyshev</b> , <i>University of Pretoria</i> Recovering of Irradiated Metal by means of Self-sustaining and Propagating Annealing: Theoretical Description	
10:15 - 10:30	<b>Pavel Korzhavyi</b> , <i>KTH Royal Institute of Technology</i> Ab-initio Simulations of Point Defects and Diffusion in Cubic Carbides	
10:30 - 10:45	<b>Nikita Epifanov</b> , <i>National Research University Higher School of Economics</i> Action upon Materials of Shock Waves Generated in Dense Plasma Focus devices and at Pulsed Laser Irradiation	
10:45 - 11:00	<b>Thomas Forstner</b> , <i>BMW Group, Graz University of Technology</i> Investigation of the fibre type influence on the energy density of the induction heating process through a semi-analytic method	
11:00 - 11:15	<b>Ilia Doludenko</b> , <i>National Research University Higher School of Economics</i> Characterization of nanowires of FeNi and FeCo alloys	
6		<a href="http://icpns2019.hse.ru" style="color: white;">http://icpns2019.hse.ru</a>



**OCTOBER 12 (11:45-13:00)**

Section A12		Room 408
Chair: <b>Weichang Chen</b> , <i>DSI Company</i>		
11:45 - 12:00	<b>Jianxin Zhou</b> , <i>Huazhong University of Science and Technology</i> Effects of solute and flow field on 3D dendritic growth of superalloys in melt convection	
12:00 - 12:15	<b>Shuangming Li</b> , <i>Northwestern Polytechnical University</i> Solute migration and thermoelectric properties of Co-Sb alloy during temperature gradient zone melting	
12:15 - 12:30	<b>Zongan Luo</b> , <i>Northeastern University</i> Extended Function and Assist Device of MMS Thermal Mechanical Simulator	
12:30 - 12:45	<b>Andrey Chastukhin</b> , <i>Vyksa Steel Works</i> Development and industrial applying of the model of austenite grain size evolution in Nb- microalloyed pipe steels	
12:45 - 13:00	<b>Xuewen Qian</b> , <i>Huazhong University of Science and Technology</i> Physical Simulation of Fluid Frontal Motion Morphology in Filling Process of Titanium Alloy Vertical Centrifugal Casting	
Section B12		Room 410
Chair: <b>György Krallics</b> , <i>University of Miskolc</i>		
11:45 - 12:00	<b>Firas Jarrar</b> , <i>Khalifa University of Science and Technology</i> Deformation Stability in Superplastic Forming at the Sheet-die Interface	
12:00 - 12:15	<b>Shihong Zhang</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i> Effect of initial texture on the formability of Zircaloy-4 sheet in sheet forming with FEM-VPSC modeling	
12:15 - 12:30	<b>Ahmed Mosleh</b> , <i>National University of Science and Technology "MISiS"</i> Optimization of superplastic forming of ultrafine-grained Ti-4Al-3Mo-1V alloy	
12:30 - 12:45	<b>Yingying Feng</b> , <i>Northeastern University</i> Research on Loading Path Control Method in Hydroforming Process of Bi-layered Tube	
12:45 - 13:00	<b>Ivan Zakhariiev</b> , <i>National Research University Higher School of Economics</i> The effect of finite element type on the results of superplastic forming simulation	
Section C12		Room 412
Chair: <b>Pavel Selyshchev</b> , <i>University of Pretoria</i>		
11:45 - 12:00	<b>Gennady Bondarenko</b> , <i>National Research University Higher School of Economics</i> Simulation of charge processes in dielectric films of MIS structures at simultaneous influence by ionization and high-field injection of electrons	
12:00 - 12:15	<b>Langping Wang</b> , <i>Harbin Institute of Technology</i> Processing and Molecular dynamics simulation of ion beam polishing of TC4 alloy	
12:15 - 12:30	<b>Vladimir Dremov</b> , <i>n Federal Nuclear Centre - Institute of Technical Physics</i> Atomistic Simulation of Strength Properties of Conventional and Nano-Structured Materials	
12:30 - 12:45	<b>Andrei Taikin</b> , <i>Moscow Institute of Physics and Technology</i> Study of the dependence of the luminescent properties of CdSe / CdS / ZnS quantum dots on their thickness	
12:45 - 13:00	<b>Pavel Bokov</b> , <i>The South African Nuclear Energy Corporation SOC Ltd (Necsa)</i> Simulation of self-sustained relaxation of a two-dimensional metastable medium by means of a traveling wave	

**OCTOBER 12 (14:00-14:45)**

Section A13		Room 408
Chair: <b>Amir A. Shirzadi</b> , <i>School of Engineering &amp; Innovation, The Open University</i>		
14:00 - 14:15	<b>Jianfeng Gu</b> , <i>Shanghai Jiao Tong University</i> Coupled Numerical Simulation and Distortion Prediction of Gears Subjected to Quenching Process	
14:15 - 14:30	<b>Maksim Terentev</b> , <i>All-Union Research and Development Center for Transport Technology, LLC</i> Method of Hardenability Bands Calculation for Low Alloy Steels	
14:30 - 14:45	<b>Hengyong Bu</b> , <i>Kunming University of Science and Technology</i> Numerical Simulation and Experimental Validation for Low-Pressure Rotors in Quenching Process	

Section B13		Room 410
Chair: <b>Jong-Ning Aoh</b> , <i>National Chung Cheng University</i>		
14:00 - 14:15	<b>Péter Bereczki</b> , <i>University of Dunaujváros</i> The effect of strain rate under multiple forging on the mechanical and microstructural properties	
14:15 - 14:30	<b>Nan Qu</b> , <i>Harbin Institute of Technology</i> High entropy alloys phase selection via machine learning	
14:30 - 14:45	<b>Mikhail Kishchik</b> , <i>National University of Science and Technology "MISiS"</i> Influence of isothermal multi-directional forging on the grain structure, superplasticity and mechanical properties of the Al-Mg-based alloy	

**OCTOBER 13 (10:00-11:15)**

Section A21		Room 408
Chair: <b>Shihong Zhang</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i>		
10:00 - 10:15	<b>Mei Zhang</b> , <i>Shanghai University</i> Elevated Temperature Deformation characteristics of 0.15C-7Mn Steels	
10:15 - 10:30	<b>György Krallics</b> , <i>University of Miskolc</i> Hot deformation properties of 8006 aluminium alloy	
10:30 - 10:45	<b>Evgenii Aryshenskii</b> , <i>Samara University</i> Development of the new fast approach for calculation of texture evolution during hot deformation of aluminum alloys	
10:45 - 11:00	<b>Rui-Xue Wang</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i> Microstructure and texture evolution of Magnesium rare earth alloy under different hydrostatic pressure conditions	
11:00 - 11:15	<b>Xuesong Xu</b> , <i>Harbin Institute of Technology</i> The microstructure and mechanical property of high niobium TiAl alloy prepared by electromagnetic cold crucible	
Section B21		Room 410
Chair: <b>Jianxin Zhou</b> , <i>Huazhong University of Science and Technology</i>		
10:00 - 10:15	<b>Yuansheng Yang</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i> Solidification Structure Control by the Interaction of Pulsed Magnetic Field and Melt	
10:15 - 10:30	<b>Xiaohui Feng</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i> Effect of forced convection on equiaxed solidification of Ni-based alloy	
10:30 - 10:45	<b>Hongsheng Ding</b> , <i>Harbin Institute of Technology</i> Numerical simulation and experimental verification of electromagnetic field of continuous casting copper crucible	
10:45 - 11:00	<b>Chao Lei</b> , <i>Sichuan University</i> Magma software simulation assisted optimization of the casting system of turbocharger castings	
11:00 - 11:15	<b>Yajun Yin</b> , <i>Huazhong University of Science and Technology</i> Research and development of casting process CAD system for steel casting based on OpenCASCADE and wxWidgets	
Section C21		Room 412
Chair: <b>Osman Adiguzel</b> , <i>Firat University, Department of Physics</i>		
10:00 - 10:15	<b>Hsin-Chih Lin</b> , <i>National Taiwan University</i> Atomic layer deposited Al <sub>2</sub> O <sub>3</sub> films on NiTi shape memory alloys for biomedical applications	
10:15 - 10:30	<b>Haitao Huang</b> , <i>Harbin Institute of Technology</i> The microstructure and mechanical property of TiAl alloy containing $\beta$ -stabilizer	
10:30 - 10:45	<b>Jian Lin</b> , <i>Beijing University of Technology</i> Effect of Temperature and Zinc Coating on Interfacial Bonding between Steel and Aluminum Dissimilar Materials	
10:45 - 11:00	<b>Marino Brcic</b> , <i>University of Rijeka</i> Equivalent beam model of SWNT and DWNT with imperfections	
11:00 - 11:15	<b>Tsai-Fu Chung</b> , <i>National Taiwan University</i> Intrinsic twin boundary of $\eta$ -MgZn <sub>2</sub> precipitate in the AA7050 aluminium alloy	

**OCTOBER 13 (11:45-13:00)**

Section A22		Room 408
Chair: <b>Hsin-Chih Lin</b> , <i>National Taiwan University</i>		
11:45 - 12:00	<b>Vasily Fedorov</b> , <i>National Research Tomsk Polytechnic University</i> Powder and wire melting of titanium alloys by electron beam	
12:00 - 12:15	<b>Danni Yang</b> , <i>Harbin Institute of Technology</i> Parameters prediction of hot-pressing sintering of high entropy alloys using numerical modeling and simulation	
12:15 - 12:30	<b>Jincheng Wang</b> , <i>Northwestern Polytechnical University</i> Macro-micro coupled simulation of microstructure evolution during laser powder deposition process	
12:30 - 12:45	<b>Jinfu Li</b> , <i>Shanghai Jiao Tong University</i> Investigation on the origin of anomalous eutectic formation by remelting of thin samples	
12:45 - 13:00	<b>Xuwen Qian</b> , <i>Huazhong University of Science and Technology</i> Optimization on the deformation of circular bosses of a compressor casing wax pattern in selective laser sintering process	
Section B22		Room 410
Chair: <b>Firas Jarrar</b> , <i>Khalifa University of Science and Technology</i>		
11:45 - 12:00	<b>Richard Fabík</b> , <i>Liberty Ostrava, a.s.</i> Influence of technological conditions of drawing on inhomogeneity of deformation under conditions of hydro-dynamic lubrication	
12:00 - 12:15	<b>Dmitriy Demin</b> , <i>National Research University Higher School of Economics</i> Analysis of residual stress after the cold-drawn wire drawing process	
12:15 - 12:30	<b>Di Wu</b> , <i>Huazhong University of Science and Technology</i> Numerical Simulation of Hot Cracks Initiation and Growth in Castings	
12:30 - 12:45	<b>Alexander Zhuravskii</b> , <i>Bauman Moscow State Technical University</i> Numerical Simulation Of Heat Transfer In Built-Up Surface	
12:45 - 13:00	<b>Yinghuai Qiang</b> , <i>China University of Mining &amp; Technology</i> Formability analysis of bearing ring produced by short-flow warm extrusion processing	
Section C22		Room 412
Chair: <b>Mei Zhang</b> , <i>Shanghai University</i>		
11:45 - 12:00	<b>Peng He</b> , <i>Harbin Institute of Technology</i> Brazing of Al <sub>2</sub> O <sub>3</sub> ceramics by Bi <sub>2</sub> O <sub>3</sub> -B <sub>2</sub> O <sub>3</sub> -ZnO glass	
12:00 - 12:15	<b>Xudong Zhou</b> , <i>Henan University of Science and Technology</i> Valence Electron Theoretical Calculation of Austenite Binding Energy	
12:15 - 12:30	<b>Zhaoxia Qu</b> , <i>Baosteel Iron &amp; Steel Co. Ltd.</i> Study on Welding Deformation Numerical Simulation for Ultra-high Strength Steel BS960E	
12:30 - 12:45	<b>Peng Wang</b> , <i>Graz University of Technology</i> A flow instability criterion for alloys during hot deformation	
12:45 - 13:00	<b>Anton Kotov</b> , <i>National University of Science and Technology "MISIS"</i> Superplastic forming of Ti-4Al-3Mo-1V alloy: behavior characterization, flow modeling, finite element simulation and superplastic forming	

**OCTOBER 13 (14:00-15:00)**

Section A23		Room 408
Chair: <b>Peng Wang</b> , <i>Graz University of Technology</i>		
14:00 - 14:15	<b>Boris Fedulov</b> , <i>Skolkovo Institute of Science and Technology</i> Influence of manufacturing process on strength of composite materials	
14:15 - 14:30	<b>Hao Lu</b> , <i>Shanghai Jiao Tong University</i> Modeling of acoustics in weakly ionized plasma of high frequency GTAW	
14:30 - 14:45	<b>Kai-Chiang Yang</b> , <i>Taipei Medical University</i> The Effect of Culture Material on Insulin Secretion in Pancreatic Beta-cells	
14:45 - 15:00	<b>Pavel Gostischev</b> , <i>National University of Science and Technology "MISIS"</i> AlGaP heterostructures and LEDs optimization	
Section B23		Room 410
Chair: <b>Peng He</b> , <i>Harbin Institute of Technology</i>		
14:00 - 14:15	<b>Longchuan Niu</b> , <i>Tampere University</i> Integration of Multi-Camera Vision System for Automatic Robotic Assembly	
14:15 - 14:30	<b>Konstantin Solomonov</b> , <i>Rostov State University of Railway Engineering (Voronezh branch)</i> Virtual and physical simulation forming of flat workpieces with upsetting	
14:30 - 14:45	<b>Hailong Su</b> , <i>Northeastern University</i> Application of Siemens PLC in Thermal Simulator Control System	
14:45 - 15:00	<b>Jicai Kuai</b> , <i>Henan Polytechnic University</i> Research on Generation and Polishing Mechanisms of Nano Grain $\alpha$ -Fe <sub>2</sub> O <sub>3</sub> in Precision Electrolytic in process dressing (ELID) Grinding	

**OCTOBER 14** (10:00-13:00)

Plenary Session in Peter the Great St. Petersburg Polytechnic University

Plenary session	
Chair: <b>Sergey Aksenov</b> , <i>National Research University Higher School of Economics</i>	
10:00 - 10:45	<b>Jitai Niu</b> , <i>Harbin Institute of Technology, Henan Polytechnic University</i> The Development of Physical Simulation Technology in the World and its Application in China
10:45 - 11:30	<b>Aleksey Borovkov</b> , <i>Peter the Great St. Petersburg Polytechnic University</i> Recent Developments and Future Trends in Numerical Simulations and Computer Engineering
Coffee brake	
12:00 - 13:00	Tour to the laboratories of Peter the Great St. Petersburg Polytechnic University

## Poster Session

List of Posters		Hall 5 <sup>th</sup> floor
01	<b>Jing Zou</b> , <i>Wuhan Institute of Technology</i> MoS <sub>2</sub> /U-g-C <sub>3</sub> N <sub>4</sub> hierarchical nanosheets synthesized by Microwave Hydrothermal Method for Enhanced Electrocatalytic Hydrogen Evolution	
02	<b>Wen Li</b> , <i>Huazhong University of Science and Technology</i> Indentation response of $\gamma$ -TiAl(111) and influence of True-twin interface	
03	<b>Aiqin Wang</b> , <i>Henan University of Science and Technology</i> Numerical Simulation of Cast-rolling Process for Copper-Aluminum Composite Plate	
04	<b>Guoqing Chen</b> , <i>Dalian University of Technology</i> Finite Element Simulation of Push-bending Process of Stainless-steel Tubes and its forming quality	
05	<b>Jianmin Zeng</b> , <i>Guangxi University</i> Effect of Contact Heat Transfer on Aluminum alloy Hot Rolling	
06	<b>Jie Zhang</b> , <i>Harbin Institute of Technology</i> Relief and Numerical Simulation of the Residual Stresses i Si <sub>3</sub> N <sub>4</sub> /Invar Joint by Multi-layers Braze Structure	
07	<b>Jitai Niu</b> , <i>Henan Polytechnic University</i> Joining Mechanism of SiC Particle Reinforced Aluminum Matrix Composite (AlSiCp-MMC) by Resistance Spot Welding	
08	<b>Jitai Niu</b> , <i>Henan Polytechnic University</i> Study on Diffusion Welding of Al-MMCs	
09	<b>Jitai Niu</b> , <i>Henan Polytechnic University</i> Vacuum Brazing of High Volume Fraction SiC Particles Reinforced Aluminum Matrix Composites	
10	<b>Wenhao Zhou</b> , <i>Hebei University of Technology</i> Numerical simulation and optimization of the hot isostatic pressure process of a part of aircraft structure	
11	<b>Wenpeng Yang</b> , <i>Henan Polytechnic University</i> Effects of extrusion temperature on texture and recrystallization in hot extruded Mg-6Zn-1Y-1Ce alloys	
12	<b>Yanmin Zhang</b> , <i>Henan University of Science and Technology</i> Fatigue Failure Prediction Model and Verification of Hot Extrusion Die	
13	<b>Yong Hu</b> , <i>Lanzhou University of Technology</i> Numerical Simulation of Effect of Glass Lubricant on Hot Extrusion of Inconel 625 Alloy Tubes	
14	<b>Yongping Lei</b> , <i>Beijing University of Technology</i> Numerical Calculation of Welding Residual Stress for Thick Wall Pressure Vessel	
15	<b>Ling Qiao</b> , <i>Harbin Institute of Technology</i> Seam Tracking for Mobile Welding Robot Based on Terminal Sliding Mode	
16	<b>Bo Wu</b> , <i>Huazhong University of Science and Technology</i> Research on Approaches for Computer Aided Detection of Casting Defects in X-ray Images with Feature Engineering and Machine Learning	
17	<b>Chunhua Ju</b> , <i>Harbin Institute of Technology</i> Photocatalytic Degradation of TOC by Ag/TiO <sub>2</sub> Coated on Light Ceramic	

18	<b>Jianmin Zeng</b> , <i>Guangxi University</i> A Method for Determination of Hydrogen Concentration in Aluminum
19	<b>Jianmin Zeng</b> , <i>Guangxi University</i> Study on Aging Characteristics of Cast Al-Si-Mg Alloy
20	<b>Pavel Gostischev</b> , <i>National University of Science and Technology "MISIS"</i> Heterostructure Improvements of the Solar Cells based on Perovskite
21	<b>Pawel Żukowski</b> , <i>Lublin University of Technology</i> Influence of an annealing on the electrical properties of the silicon-insulator system implanted with In and Sb ions
22	<b>Sergey Belskiy</b> , <i>Lipetsk State Technical University</i> Study of the microstructure of electrotechnical anisotropic steel with accelerated cooling
23	<b>Tomasz Koltunowicz</b> , <i>Lublin University of Technology</i> Determination of chemical composition of metal-dielectric nanocomposites based on SiO <sub>2</sub>
24	<b>Wang Xiaopeng</b> , <i>Harbin Institute of Technology</i> Characterization of thermal deformation behavior of a $\gamma$ -TiAl alloy
25	<b>Vladimir Gavrish</b> , <i>Sevastopol State University</i> On the issue of the techniques to produce mass and low-price tungsten oxide nanopowder
26	<b>Fuxiao Chen</b> , <i>Henan University of Science and Technology</i> Research on precise establishment of constitutive relation of laminated composite
27	<b>Victoria Sturova</b> , <i>Lipetsk State Technical University</i> Experimental studies of the work of steel fiber in fine-grained slag concrete, taking into account the age of the concrete matrix
28	<b>Lele Tong</b> , <i>Huazhong University of Science and Technology</i> Numerical investigation of turbulent flow behavior of sand particles in core shooting process
29	<b>Lianxi Hu</b> , <i>Harbin Institute of Technology</i> Hot deformation behavior and flow stress model of an as-cast GH4720LI Ni-based alloy
30	<b>Xuewen Chen</b> , <i>Henan University of Science and Technology</i> Valence Electron Theoretical Calculation of Austenite Binding Energy
31	<b>Xiaoyun Feng</b> , <i>Harbin Institute of Technology</i> Numerical simulation for isothermal forging of cup-shaped component of 6A02 Aluminum alloy
32	<b>Abdul Razaq</b> , <i>Huazhong University of Science and Technology</i> Influence of Alloying Elements Sn and Ti on the Microstructure and Mechanical Properties of Gray Cast Iron
33	<b>Anna Levykina</b> , <i>Lipetsk State Technical University</i> Hot rolling strips at the casting and rolling unit during coil-to-coil and endless rolling modes
34	<b>Jianmin Zeng</b> , <i>Guangxi University</i> Bubble Flotation for Purification of High Manganese Steel with Porous Blower
35	<b>Xiaohui Feng</b> , <i>Institute of Metal Research, Chinese Academy of Sciences</i> Numerical Simulation of Grain Refinement of Pure Copper Solidified under Pulsed Magnetic Field
36	<b>Yongjia Zhang</b> , <i>Huazhong University of Science and Technology</i> Parallel partitioning algorithm for numerical simulation of gas-liquid two-phase flow during the mold filling process

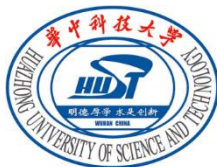


37	<b>Changchun Dong</b> , <i>Huazhong University of Science &amp; Technology</i> Study of the curing process of carbon fiber reinforced resin matrix composites in autoclave processing
38	<b>Jianmin Zeng</b> , <i>Guangxi University</i> Purification of Aluminum melt in Crucibles by Bubble Flotation
39	<b>Yuping Duan</b> , <i>Dalian University of Technology</i> Simulation models of Microwave photonic crystals: Metamaterial with enhanced and tunable performance by surface plasmon polaritons produced in microwave band
40	<b>Fantao Kong</b> , <i>Harbin Institute of Technology</i> Hot Deformation Behavior of a As-forged $\beta$ -solidifying TiAl Alloy
41	<b>Huachen Li</b> , <i>Huaqiao University</i> Numerical simulation of temperature field of boron steel/Q235 laser tailored blanks by welding with synchronous thermal field
42	<b>Jitai Niu</b> , <i>Henan Polytechnic University</i> Physical simulation of weld heat affect zone for a high strength wear resistant alloy
43	<b>Jiuba Wen</b> , <i>Henan University of Science and Technology</i> Numerical simulation and experimental research of the aluminum alloy rolling edge crack at room temperature
44	<b>Junguang He</b> , <i>Henan University of Science and Technology</i> Hot deformation behavior and processing map of cast 5052 aluminum alloy
45	<b>Lanyu Mao</b> , <i>Northeastern University of China</i> Numerical simulation of electron beam welding for Q345 and 3Cr2Mo
46	<b>Zarina Satbaeva</b> , <i>East Kazakhstan State University</i> Physical interaction model of low-temperature plasma with the surface of the steel under the electrolytic-plasma nitriding
47	<b>Wang Cong</b> , <i>Northeastern University</i> Flow behavior and microstructure evolution of Mg-5Zn-3.5Sn-1Mn-0.5Ca-0.5Cu alloy during hot compression
48	<b>Mei Zhang</b> , <i>Shanghai University</i> Experimental and Numerical Simulation on Laser welding of High Manganese TWIP980 Steel
49	<b>Peng He</b> , <i>Harbin Institute of Technology</i> Correlation of Process Parameters and Porosity in Laser Welding of 7A52 Aluminum Alloy using Response Surface Methodology
50	<b>Maxim Garkusha</b> , <i>Moscow Institute of Physics and Technology</i> Researching CdSe/Cds/ZnS Quantum Dots Lifetime in Cathodoluminescent Mode
51	<b>Hongwei Wang</b> , <i>Harbin Institute of Technology</i> The effect of pressure on the stable growing wavelength of intermetallic compound Al <sub>3</sub> Ni with nil solid solubility and potential curves of hypo-peritectic Al-Ni alloy
52	<b>Nikolay Kolbasnikov</b> , <i>Peter the Great St.Petersburg Polytechnic University</i> Modeling of Austenitization Kinetics under Continuous Heating of Steels with Complex Microstructure
53	<b>Tu Zhixin</b> , <i>Huazhong University of Science and Technology</i> A Taylor approximation scheme for coupling thermodynamic data of multicomponent alloy in phase-field model

54	<b>Wenyan Wang</b> , <i>Henan University of Science and Technology</i> Effect of Heat Treatment on Microstructure and Properties of Ti-6Al-4V-0.5Si alloy
55	<b>Mei Zhang</b> , <i>Shanghai University</i> Investigation on High Temperature Compression Deformation Behavior of 0.2C7Mn Steel
56	<b>Guanbing Xiang</b> , <i>Huazhong University of Science and Technology</i> A flexible method for converting non-relational text data to relational data for data acquisition of equipment operation
57	<b>Zhipeng Zhang</b> , <i>Huazhong University of Science and Technology</i> A Method for Modeling and Extracting 3D Structural Features of Castings Considering Size
58	<b>Qian Xu</b> , <i>Huazhong University of Science and Technology</i> Using crystal plasticity finite element method to investigate the mechanical properties under uniaxial compression
59	<b>Taher Shehabeldeen</b> , <i>Huazhong University of Science and Technology</i> Comparison of RSM with ANFIS in predicting tensile strength of dissimilar friction stir welded AA2024 -AA5083 aluminium alloys
60	<b>Jianmin Zeng</b> , <i>Guangxi University</i> Physical Simulation of Recovery Cast iron from Bayer Red Mud
61	<b>Peng Wan</b> , <i>Huazhong University of Science and Technology</i> Experimental Study on Gas Evolution Process of Binders in Foundry Industry based on TG-MS
62	<b>Rande Kang</b> , <i>Shenyang Kejing Auto-Instrument Co.,Ltd</i> Manufacturer of material research equipment, and related products

## SPONSORS AND PARTNERS

- National Research University Higher School of Economics, Russia
- State Key Laboratory of Advanced Welding &Joining, Harbin Institute of Technology China
- State Key Laboratory of Materials Processing and Die & Mould Technology, Huazhong University of Science and Technology, China
- Henan Polytechnic University, China
- Collaborative Innovation Center of Non-ferrous Metals, Henan Province, Henan University of Science and Technology, China
- Dynamic Systems Inc., USA
- Changzhou Taigeer Electronic Materials Technology Co, Ltd., China
- Plenary Session in Peter the Great St. Petersburg Polytechnic University, Russia
- Lipetsk State Technical University, Russia



## Dynamic Systems Inc. Company Profile

Dynamic Systems Inc. (DSI) has been a world leader in development of thermal-mechanical physical simulation technologies for more than 60 years.

The most widely known simulators produced by DSI for physical simulation are Gleeble® Systems. Gleeble systems provide a highly efficient method for studies of casting/melting, semi-solid working, hot deformation, CCT/TTT, heat treatment including strip annealing, and welding processes, etc.. By using physical simulation, new materials and process improvements can be studied in a laboratory and successfully transferred to plant production lines. This reduces the cost, risk, and time associated with studying new processes or materials on the production line. Gleeble systems offer high quality and versatility for performing metallurgical studies.



Typical applications include:

- **Continuous Casting** - Simulation of casting processing on the Gleeble can be used to develop casting process maps to eliminate cracks in the cast slabs and billets.
- **Semi-Solid Working** - The low force jaw system has been proven unique and successful in semi-solid materials studies.
- **Hot Workability of Materials** - Gleeble systems offer outstanding methods for evaluating the hot workability of materials. Tests that can be performed include hot ductility, strain induced crack opening (SICO™), uniaxial compression for flow stress measurement, plane strain compression, and torsion testing. The patented Hydrawedge system allows accurate simulation of high speed multiple stand rolling processes, such as strip and wire rolling.

- **Weldability of Materials** - Gleeble systems are capable of heating specimens at rates in excess of 10,000oC/sec. Gleeble Systems were originally invented for HAZ and weld metal weldability studies.
- **Static/Dynamic CCT Studies** - Fast heating and rapid cooling with isothermal planes across the specimen makes the static/dynamic CCT/TTT work much more accurate and easier on Gleeble systems, while development of the high speed ISO-QTM quenching technique renders the Gleeble system unique in thermo-mechanical processing studies.

The universal functions of Gleeble systems provide researchers with a very useful tool for developing new steels, eliminating cracks in work pieces on production lines, developing and optimizing production processes. This increases the production line yields, reduces the time to introduce new steel from research to market, reduce the cost of production, and increase the quality of the products, all leading to a competitive edge in the global market. Nine of the 10 largest steel producers in the world have Gleeble systems and hundreds of Gleeble Systems have been installed worldwide.

Gleeble systems are available in several models, each with a wide variety of available options and configurations. This flexibility allows the tailoring of a Gleeble system to meet your exact testing requirements. Options available include a variety of transducers, extensometers, load cells, non-contact laser extensometers, infrared pyrometers, quench systems, jaws, grips and vacuum systems

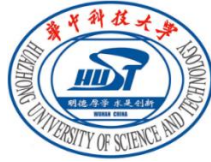
The most popular machines are the Gleeble 3180, Gleeble 3500 and Gleeble 3800. 'Mobile Conversion Units' (MCUs) are available for 3500 and 3800 series which provide application specific capabilities. MCUs include the Hydrawedge II, MAXStrain II, and Hot Torsion System. Additionally, DSI manufactures the HDS-V40, a highly specialized machine used to simulate direct rolling, from the continuous caster to the end of the hot rolling process, all in one continuous sequence.

More information on Gleeble Systems can be found on the company website: [www.Gleeble.com](http://www.Gleeble.com)



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**HUAZHONG UNIVERSITY OF  
SCIENCE & TECHNOLOGY**



**材料成形与模具技术国家重点实验室**  
State Key Laboratory of Materials  
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InteCAST Software Center is one of the biggest casting simulation research centers in the world. Currently the development team of the InteCAST Software Center consists of more than 70 members, including professors, engineers, Ph.Ds and masters.

After more than thirty years' development by Huazhong University of Science and Technology (HUST) and continuous improvement through applications in foundry enterprises, InteCAST is the most famous casting process simulation software in China. There are more than 2700 licenses used in about 700 foundries and 50 universities of China, and also 15 licenses used in USA, England, Switzerland, Singapore, Malaysia and Indonesia.



**InteCAST Software**

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## **State Key Laboratory of Advanced Welding &Joining**

The State Key Laboratory of Advanced Welding &Joining (SKL-AWJ) in China is the only state key lab. In welding/joining fields. It was set up in 1989, and tried out operating in 1991 and passed the check of the government in October 1995. In May 1998 the SKL-AWJ passed the evaluation of the Ministry of Education, and then pass the first and second evaluation organized by the ministry of Science and Technology of the People's Republic of China in March 2003 and 2008 respectively.

Our research fields cover high efficiency welding methods and process intelligent control ;reliability and quality evaluation of welding structure, special joining processed for new materials and alien materials; micro joining and electrical packaging and advanced surface modification and service time prolonging technology.



The SKL-AWJ, supported by Harbin Institute of Technology, is the main base for research of welding fundamental of welding fundamental theories, development of advanced welding techniques

and cultivation of welding scientists in china. There are 52 researchers in the lab at present. Among them, 27 are professors and 14 are associate professors (29 of them are doctor supervisors). This research team holds together, endeavors to innovate and exploits in welding fields. With young fellows as its main part, 49 of them were awarded the PhD degrees, which occupy 100% of the young teachers.

Since 5 years ago, the SKL-AWJ has undertaken 367 scientific research projects, among which 51.6% projects are lengthways research project. And the total research fund is about 180 million Yuan. For instance there are 3 “863” High-Tech projects, and 7”973”projects. At the same time, 45 projects are supported by NSFC and 30 are National Defense project.

During this period, 4research projects were awarded by government and 14 research projects were awarded by ministries and provinces. And 838 papers were published by SCI, 375 were indexed into EI. At the same time, 16 academic books were published and 234 invention patents were issued respectively, 13 international conferences were held and assisted by The SKL-AWJ.

As a cultivation base for researchers, the lab recruits more than 50 undergraduate students, about 70 graduate students and over 30PhD. Candidates each year. The SKL-AWJ takes active part in external intercommunication, and keeps high-level academic communication and technical cooperation with other famous universities and organizations.

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河南理工大学

HENAN POLYTECHNIC UNIVERSITY

## Henan Polytechnic University

Henan Polytechnic University (HPU), with a long history, is the first mining university in Chinese history as well as the earliest higher college in Henan province. Its former is Jiaozuo Coal Mining School which was established by the British Syndicate Co. Ltd., in 1909.

Now HPU has the right to grant a doctorate and has developed into a multi-disciplinary coordinated development of teaching and research university which covered science, technology, management, art, law, economics and education, etc. HPU is a the A-level university of undergraduate teaching assessed by the National Ministry of Education and honored with one of key backbone universities in Henan province. University recruits students from nationwide, with the qualification of granting doctoral, master, bachelor and recruiting overseas students.



Henan Polytechnic University (HPU) is located in Jiaozuo City, a newly-developing industrial and national excellent tourism city. Jiaozuo City is in the northwest of Henan Province. It stands at the southern foot of Taihang Mountain and on the north bank of the Yellow River. It is bordered with Zhengzhou, the capital city of Henan Province on the south bank of Yellow River. Jiaozuo is rich in natural landscape and humanity landscape. The deep historical and cultural accumulation and sceneries provide HPU with a wonderful humane and social environment.

In the history of the university, the great educator Cai Yuanpei, the famous geologist Weng Wenhao, the mining mogul Sun Yueqi served as the board of directors, executive director, honorary president and chairman. Zhang Zhong-lu, Zhang Qing-lian, Ding Guan-hai, Zhang Bo-sheng and many other overseas scholars, professors taught in university and served as leadership positions successively. Under their leadership, the university became well-known home and abroad.

During a century's period, HPU has formed its idea of running school "Educate People and Advocate Academic" and founded the spirit of "Learn Eagerly and Act Diligently". The university has carried on its excellent traditional thoughts of "Work Hard and Achieve Pragmatic Results, Love China and Love HPU". The deep cultural accumulation through 100 years and rich education experience laid a solid foundation for its rapid development.

HPU devotes itself to promoting international academic exchanges and cooperation with institutions of higher education of foreign countries. Since 1980s, it has established sisterhood relationship with 15 countries and more than 30 universities and research institutions in USA, France, Canada, Australia, Korea, etc and had made great achievements in teachers exchange, students exchange, scientific research and academic cooperation.

Hundred years of hard work bred today's fragrant blossoms. Since its establishment, the university has cultivated more than 13 senior specialized personnel for the country. Most graduates become the backbone in their units; many people have become well-known experts, scholars, academicians and served as the provincial, city and large enterprise leadership positions.

Centennial HPU, Century Elegance. Standing at a new historical starting point, tailing the wind of centennial celebration, according to the university's first CPC convention depicted grandiose blue print, HPU is thoroughly implementing the scientific outlook on development, opening the thought, deepening reform, promoting development mode change, striving to improve the quality of personnel training, scientific research and serving for economic and social development of ability, to create the new phase of high-level university and compose the national golden chapter.

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## **Collaborative Innovation Center of Non-ferrous Metals Henan Province China**

Henan Collaborative Innovation Center of Non-ferrous Metals was founded in August 2013 with the approval of Education Department of Henan Province, which was initiated by Henan University of Science and Technology, and formed collaboratively by the major companies and research institutes in Henan Province, such as Zhengzhou University LCO Luoyang Copper Company Ltd, Luoyang Copper One Metal Material Develops Company Ltd and so on.



Devoting to significant strategic demands of China “Central Plains Economic Region Construction” and technological demands of non-ferrous metals industry in Henan province, Henan Collaborative Innovation Center of Non-ferrous Metals set up 3 innovation platforms naming green metallurgy, design and development of new material and advanced processing technology by means of gathering talents, forming innovation team and innovative mechanism in the respects of personnel employment, resources integration, performance appraisal and so on. As a result, a batch of key technologies in non-ferrous metal industry has been broken through, sustainable innovation ability in

talent, discipline and scientific research in Henan province has been promoted comprehensively as well as industrial transformation has been upgraded. Due to such achievements, Henan Collaborative Innovation Center of Non-ferrous Metals has become a major base of industrial technological innovation of non-ferrous metal industry in China.

As the development target of Henan Collaborative Innovation Center of Non-ferrous Metals, it will be an innovation service base for government-industry-university-research cooperation in Henan province. In the future, the key generic technology which restricts the development of the non-ferrous metal industry in Henan province will be overcome. It works as the information sharing, technical services, project evaluation and talent training base of non-ferrous metal in Henan province. A series of key technologies of green metallurgy for non-ferrous metals will be integrated and innovated. The research base of advanced material and high-value-added product for high-performance copper alloy or tungsten-molybdenum alloy will be built. And the research and development platform for the advanced composite and processing technology of non-ferrous metal will be established as well.

Collaborative Innovation Center of Non-ferrous Metals Henan Province ,China

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## **Changzhou Taigeer Electronic Materials Technology Co, Ltd. China**

Changzhou Taigeer Electronic Materials Technology Co. Ltd. is mainly engaged in technology development, technical consultation, provision of heat dissipation materials, technical services, production and sales of heat dissipation components in the field of IGBT power semiconductor packaging. The company develops, manufactures and sells aluminum-based silicon carbide, a third-generation electronic packaging material. According to user needs, we have developed a variety of SiCp/AI products to provide professional thermal management materials and technical solutions for microwave devices, high-power devices, and microelectronic devices.



In order to produce high-quality SiCp/AI heat-dissipating materials more efficiently, the company's well-known universities and research institutes in the United Nations independently developed and designed to meet high thermal conductivity, adjustable thermal expansion coefficient, high specific strength and specific stiffness, wear resistance and fatigue resistance, low density and

good dimensional stability and other excellent thermophysical properties and mechanical properties of the production equipment, and formed a number of invention patents.

The company's main testing equipment includes: Germany's Nike scattering method thermal conductivity meter Nexi thermal expansion instrument VHX super depth of field three-dimensional microscope and the United States microcomputer control electronic universal testing machine. The company's main products: IGBT module heat sink substrate, rectifier device heat sink substrate, solid state relay and thyristor heat sink substrate, high-end LED display device heat sink substrate, and other military heat sink substrates.

The company's products are widely used in rail transportation, new energy vehicles, power systems, aerospace, military and other fields, and are the key materials in the field of high-generation electronic packaging.

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