5th Forum of Materials Genome Engineering

December 14-16, 2021 • Zhengzhou China

The Forum of Materials Genome Engineering (***ForMGE***) is one of the Chinese Academy of Engineering (CAE) International Top-level Forums on Engineering Science and Technology Strategy. ***ForMGE*** focuses on playing a positive role in establishment and promotion of the new paradigm in materials science and new research methods on materials discovery, promoting the development and application of key technologies from MGE. It has been successfully held in Guangzhou, Beijing, Kunming and Mianyang in the past four years from 2017, with around 1000 attendees every year, promoting the development and application of material genetic engineering in the aspects of basic theories, frontier technologies, and key equipment, and strengthening international exchanges.

The 5th ForMGE will be held on December **14-16, 2021**, in **Zhengzhou, China**. This fourm is organized by Chinese Academy of Engineering and Chinese Materials Research Society, hosted by Zhengzhou University, University of Science and Technology Beijing, Department of Chemical Engineering, Metallurgy and Material Engineering of CAE, Industry Development and Promotion Center of Ministry of Industry and Information Technology, and Beijing Advanced Innovation Center for Materials Genome Engineering.

International scientists and engineers are welcome to register to attend the forum for the online part. For the latest information, please follow the official website: **www. ForMGE.cn**

Topic

1. High-throughput materials computation and design
2. High-throughput materials processing and characterization
3. High effective evaluation and life prediction technologies for materials service
4. Materials database and big data technologies
5. Application of MGE technologies

Registration

Free registration can be applied on for international attendees joining online.

More information can also contact with mge-p@ustb.edu.cn by email.

Program Schedule of 5th ForMGE

Plenary Session

Beijing Time: 15/12/2021, 9:00 - 17:15

No.	Time	Speaker	Organization	Presentation Title
F-01	9:15- 9:50	Prof. Ichiro Takeuchi	University of Maryland, USA	Autonomous Combinatorial Experimentation for Streamlined Materials Discovery
F-02	9:50-10:25	Prof. Chen Wei	Northwestern University, USA Member of National Academy of Engineering	Adaptive discovery and mixed-variable Bayesian optimization of next generation synthesizable microelectronic materials
10:25-10:40			Tea Break	
F-03	10:40-11:15	Prof. Turab Lookman	AiMaterials Research LLC, USA	Information-directed approaches to Materials Discovery
F-04	11:15-11:50	Prof. Xu Nanping	State Key Laboratory of Materials-Oriented Chemical Engineering Academician of China Engineering Academy	Technology innovation of carbon neutralization at carbon peak
12:00-13:30			Lunch	
F-05	13:30-14:05	Prof. Dong Shaorning	Shanghai Institute of Ceramics, Chinese Academy of Sciences, Academician of China Engineering Academy	Study of high throughout simulation computation and fabrication of ceramic matrix composites
F-06	14:05-14:40	Prof. Christoph J. Brabec	Friedrich-Alexander-Universität Erlangen - Nürnberg, Germany	Accelerating the development of new semiconductors with automated research lines
F-07	14:40-15:15	Prof. Lu Jian	City University of Hong Kong, Member of National Academy of Technology of France	Recent development of 2D/3D/4D printing as major tools for materials genome engineering
15:15-15:30			Tea Break	
F-08	15:30-16:05	Prof. Zhang Guoqing	Beijing Institute of Aeronautical Materials	Study and applications of critical technologies in genetic engineering of metal structure and composite materials
F-09	16:05-16:40	Prof. Gianaurelio Cuniberti	Technische Universität Dresden , Germany, Academia Europaea	Functional Material Genomics: Towards Physicochemical Databases for Covalent Organic Framework Synthesis and Digital Olfaction
F-10	16:40-17:15	Leader of Zhengzhou High-tech Zone	Zhengzhou High-tech Zone Management Committee	Introduction of high-tech zone industry

Symposia I

Chairs: Prof. Sun Zhimei, Beihang University; Prof. Zhou Zhen, Zhengzhou University

Beijing Time: 16/12/2021, 8:30-17:45

No	Time	Speaker	Organization	Presentation Title
S1-01	8:30-9:00	Liu Yuanyue	The University of Texas at Austin, USA	First-Principles Simulations of Electronic Transport and Electrocatalysis of 2D Materials
S1-02	9:00-9:30	Kyeongjae Cho	The University of Texas at Dallas, USA	Materials Design and Engineering in Battery Technology Innovations
S1-03	9:30-10:00	Weng Hongming	Institute of Physics, Chinese Academy of Sciences	Material Design and Computational Study of Dirac Semimetals
S1-04	10:00-10:30	Chen Xingqiu	Institute of Metals, Chinese Academy of Sciences	Topological phononic materials: Computational and a big data
10:30-10:45			Tea Break	
S1-05	10:45-11:15	Feng Yuanping	National University of Singapore, Singapore	2DMatPedia and High-throughput Discovery of Novel 2D Functional Materials
S1-06	11:15-11:45	Sun Zhimei	Beihang University	The accurate calculation of high-temperature band structure and electrical conductivity for semiconducting materials
S1-07	11:45-12:15	Du Aijun	Queensland University of Technology, Australia	Designing and Discovering Novel Nanomaterials for Energy and Electronics Applications via High-throughput Computations
12:15-13:30			Lunch	
S1-08	13:30-14:00	Sun Chenghua	Swinburne University of Technology, Australia	Knowledge-Driven Catalyst Design for Ammonia Synthesis
S1-09	14:00-14:30	Zhang Wenqing	Southern University of Science and Technology	Modeling complex materials with chemical bond hierarchy: A machine-learning interatomic potential approach
S1-10	14:30-15:00	Yan Jiao	University of Adelaide, Australia	Modelling Electrocatalyst Materials for N_2 Reduction Reaction and CO_2 Reduction Reaction by High-Throughput Computation
S1-11	15:00-15:30	Michael Springborg	University of Saarland, Germany	On the Theoretical Optimization of Properties
15:30-15:45			Tea Break	
S1-12	15:45-16:15	Pan Hui	University of Macau	Design of Materials for multi-functional applications - A view from "Solid State Physics"
S1-13	16:15-16:45	Wang Weichao	Nankai University, China	Rational Catalysis Design Based on the Coordination Field Synergistic Catalysis Mechanism
S1-14	16:45-17:15	Stephen Elliott	University of Cambridge, UK	Chemical bonding in phase-change materials: the role of multi-centre hyperbonding
S1-15	17:15-17:45	Zhang Yanning	University of Electronic Science and Technology, China	Electronic Structures Tuning of Transition-Metal Compounds for Electrocatalysis: Theoretical studies

Symposia II

Chairs: Prof. Wang Hong, Shanghai Jiao Tong University;
Prof. Xue Dezhen, Xi'an Jiaotong University

Beijing Time: 16/12/2021, 8:30-17:45

No.	Time	Speaker	Organization	Presentation Title
S2-01	8:30-9:00	Digby D. Macdonald	University of California at Berkeley, USA	Determinism in Science and Engineering
S2-02	9:00-9:30	Peter L. Andresen	U.S. National Academy of Engineering, USA	Historical vs. Future Material Degradation in LWRs
S2-03	9:30-10:00	Mo Yifei	University of Maryland, USA	Data-driven discovery of new materials for solid-state batteries
S2-04	10:00-10:30	Wang Kun	Alfred University, USA	Accelerated discovery of high entropy alloys assisted by machine learning
10:30-10:45			Tea Break	
S2-05	10:45-11:15	Shuichi Iwata	University of Tokyo, Japan	Lessons to Integrate Heterogeneous Data Sets for Prediction
S2-06	11:15-11:45	Pan Feng	Peking University Shenzhen Graduate school, China	Exploring material genes and structure chemistry in Li-ion batteries
S2-07	11:45-12:15	Yee-Fun Lim	A*STAR, Singapore	Accelerated catalyst development platform high-throughput experiment+ calculation
12:15-13:30			Lunch	
S2-08	13:30-14:00	Yang Jinglei	The Hong Kong University of Science and Technology	Data-driven materials design and property extraction from simple testing
S2-09	14:00-14:30	Xi Shibo	National University of Singapore, Singapore	Extension and Application of Multivariate Curve Resolution–Alternating Least Squares to XAFS data obtained in the in-situ investigation of Cu-SSZ-13 catalysts–a case study
S2-10	14:30-15:00	Chen Xiang	Tsinghua University	Multi-scale simulation and machine learning research of Lithium battery electrolyte
S2-11	15:00-15:30	Liu Zhe	Northwestern Polytechnical University	Active Learning with Knowledge Constraints for Process Optimization of Perovskite Solar Cells
15:30-15:45			Tea Break	
S2-12	15:45-16:15	Zhao Yicheng	Helmholtz-Institute Erlangen-Nürnberg, Germany	High-throughput engineering and interpret table machine leaning for stable metal-halide perovskite materials
S2-13	16:15-16:45	Hannah-Noa Barad	Max Planck Institute for Intelligent systems, Germany	Advanced high-throughput synthetic methods and parallel characterization tools for multi nary materials
S2-14	16:45-17:15	Thierry Couvant	EDF R&D, France	Stress Corrosion Cracking simulation as a support to engineering
S2-15	17:15-17:45	Chen Bo	University of Leicester, UK	High Temperature Very-High-Cycle Fatigue Behaviour and Lifetime Prediction of Ni-base Super alloys

Poster Showcase Online: https://adTGOT4KSU.duotoupiao.com/

More information: **WWW.ForMGE.cn**