

INTERNATIONAL SUMMER SCHOOL

ENERGY STORAGE TECHNOLOGY UNDER DUAL-CARBON STRATEGY

Jul 3rd – Jul 16th, 2023

Harbin Institute of Technology, Harbin, P.R. China

GENERAL INFORMATION

Dual-carbon is the abbreviation of carbon peak and carbon neutrality. The national “dual-carbon” strategy advocates a green, environmentally friendly and low-carbon lifestyle. Accelerating the pace of reducing carbon emissions is conducive to guiding green technology innovation and improving the global competitiveness of industries and economies. China continues to promote the adjustment of industrial structure and energy structure, and vigorously develops renewable energy. China strives to reach the peak of carbon dioxide emissions by 2030, and strives to achieve the goal of carbon neutrality by 2060. Driven by today’s “dual-carbon” policy, it will have huge market prospects for the long-life, high-safety and low-cost power battery and the energy storage battery manufacturing technologies. The commercialization technology of fuel cells is a hot research spot to attract investment. Lithium-sulfur batteries and other new batteries have begun to arise, and electrocatalytic carbon dioxide conversion to higher value liquid chemicals, such as methanol, ethanol, acetic acid, formic acid, or compounds with higher carbon content, have rapidly become research hotspots as well. “Electrochemistry and the ‘Dual-Carbon’ Era” International Summer School focuses on the theme of “Electrochemical Theory and Technological Progress in Response to the ‘Dual-Carbon Strategy’” from Chinese government. Well-known experts in the scientific research area and CEO from industries are invited to focus on the cutting-edge technology of chemical power sources and the electrocatalytic technology in energy conversion. Through the summer school, it carries out lectures, enterprise visits, and host the “New Energy Materials Design and Application” innovation competition to provide

students with a platform for learning, communication and practice.

ATTENDANCE REQUIREMENTS

Undergraduate or graduate attendees with background in chemistry, chemical engineering, materials and engineering, energy storage and conversion related etc. are welcomed. All participants must have a good command of English. Some lectures will be given in English or Chinese with translation in English.

LECTURES AND TALKS

The summer school offers three lectures by Academicians and twelve seminars talks by Professors. Lecturers and speakers are invited from top institutions in Canada, Europe, Japan and China, including Énergie Matériaux Télécommunications Research Centre in Canada, Max Planck Institutes in Germany, Uppsala University, University of Calgary, The University of Tokyo, Chinese Academy of Sciences, Harbin Institute of Technology and CEO of the Vision. “New Energy Materials Design and Application” innovation competition and group study will also be performed every day.

Lecturers/ Speakers	Institution	Topics	Units
Shuhui Sun	Énergie Matériaux Télécommunications Research Centre	Development of Energy Storage and Conversion Technology	10
Mischa Bonn	Max Planck Institutes in Germany	Development and Application of Laser (Ultrafast) Spectroscopy	10
Jiefang Zhu	Uppsala University	Development and Breakthrough of Electrode Materials in Lithium-ion Battery	10
Venkataraman Thangadurai	University of Calgary	Development and Application of Solid Oxide Fuel Cell	10
Kazuhiro Takanabe	The University of Tokyo	Application of Heterogeneous Catalysis in Renewable Energy Conversion	10
Yanqiang Huang	Chinese Academy of Sciences-Dalian	Application and Development of Single-Atom Catalysts in Energy Storage and Conversion	4
Guanying Chen	Harbin Institute of Technology	Application Prospects of High Molecular Compounds in Carbon Neutrality	4
Huanong Zhang	CEO of the Vision	Opportunities and Challenges of Energy Storage Technology under the “Dual-Carbon Strategy”	4

Teams	HIT/Battery Companies	Innovation Competition: Design and Application of New Energy Materials	32
-------	-----------------------	--	----

GROUP RESEARCH PROJECT

Participants will be grouped into 6 teams or more, each with 8-9 members, to work on a project on new structural materials design and finish the experimental reports. Each group may select one from five areas: cathode materials for lithium-ion battery, Electrode materials for solid state battery, Electrocatalyst for CO2 reduction and fuel cells, new materials for Na-ion battery, Structure characterization of materials. Instructors are available online or offline.

	Week1							Week2						
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
M	Reg	L	S	S	S	S	Visit	L	S	S	S	S	S	Leave
A	Open	S	C	C	C	A1		S	C	C	C	A2	Close	
E		S	G		G			S	G		G			

Note: M: Morning; A: Afternoon; E: Evening; L: Lecture; S: Seminar; C: Competition; G: Group Study; A1 &A2: Activities;

CONTACT INFORMATION

Please contact Prof. Wang Jiajun at jiajunhit@hit.edu.cn(E-mail).