The 4th International Conference on Energy and AI

Conference Program

August 10-13, 2023

New Century Hotel, Xining, Qinghai, China

http://www.energy-ai.org/

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Prof. YAO Mingfa

Qinghai Minzu University & Tianjin University, China

Conference Co-chairs

Prof. LIU Haifeng

Tianjin University, China

Prof. JIAO Kui

Tianjin University, China

Prof. XUAN Jin

Surrey University, UK

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Conference General chair

Prof. YAO Mingfa, Qinghai Minzu University & Tianjin University, China

Conference Co-chairs

Prof. LIU Haifeng, Tianjin University, China
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Conference Venue

Xining Qinghai
New Century Hotel（青海开元大饭店）

Address: No.7 Jianguo Road,Chengdong District, Xining City, Qinghai Province

The hotel is located in the core business circle of the Railway station in Chengdong District of Xining City, adjacent to Dongguan Mosque, Huangshui River and Mojia Street characteristic walking Street. The surrounding area integrates eating, drinking, playing, entertainment and walking, making it convenient to travel.
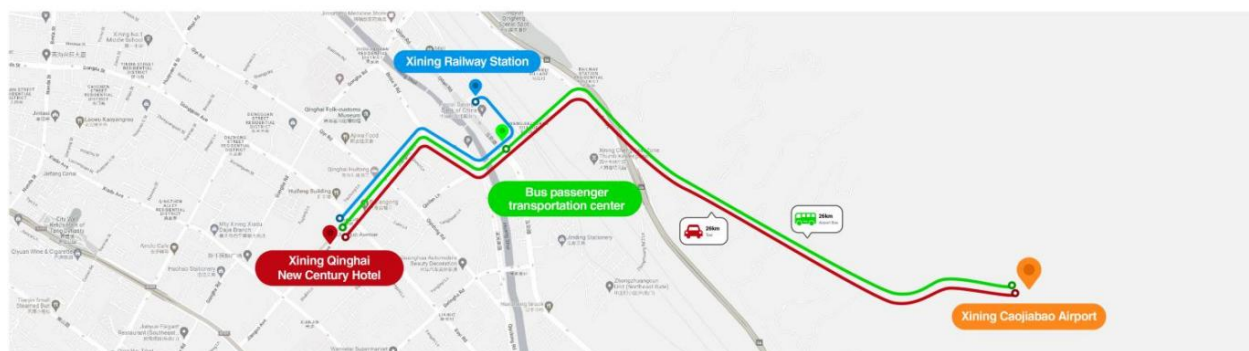
📍 Xining Railway Station   📍 Xining Caojiabao Airport   📍 Xining Qinghai New Century Hotel

No.	Route	Distance	Method	Remark
—●—	Airport - Hotel	26km	Taxi	about 40mins
—●—	Airport - Railway Station(Bus passenger transportation center)	26km	Airport Bus	Take Line 1, get off at station "Railway Station"
	Railway Station(Bus passenger transportation center) - Hotel	2km	Bus No.9/28/31	Get off at station "Qinghai-Tibet Railway Company"
—●—	Railway Station - Hotel	2km	Bus No.9/28/31	Get off at station "Qinghai-Tibet Railway Company"

- Airport bus departure time is adjusted according to flight dynamics. Bus leaves every 30 minutes on average.
- Airport bus ticket price: RMB21, run time: about 60 minutes.

Program - Day 1

Plenary session 1

Friday Morning, August 11th, 2023 (Beijng Time: GMT+8)
Room 1: 4F Ballroom

Time	Program	Speaker
08:30-08:40	**Opening Ceremony**	
08:40-09:20	Plenary 1: To be determined	Prof. GUO Liejin, Xi'an Jiaotong University
09:20-10:00	Plenary 2: Flow cells for long-duration energy storage	Prof. ZHAO Tianshou, Southern University of Science and Technology
10:00-10:20	**Coffee/tea break**	
10:20-11:00	Plenary 3: Artificial neural network modelling of PEM fuel cell degradation dynamics	Prof. LI Xianguo, University of Waterloo
11:00-11:40	Plenary 4:High-energy lithium-ion and lithium-sulfur batteries: status, challenges and perspectives	Prof. ZHANG Jiujun, Fuzhou University & Shanghai University
11:40-12:00	Plenary 5: Towards inclusion and diversity in journal publishing	Dr. ZHANG Jing, Elsevier
12:00-14:00	**Lunch (buffet)**	

Plenary session 2

Friday Afternoon, August 11th, 2023 (Beijng Time: GMT+8)
Room 1: 4F Ballroom

Time	Program	Speaker
14:00-14:30	Plenary 6: Discussions on application of hydrogen and hydrogen-based fuels in zero carbon electricity	Prof. YAO Mingfa, Qinghai Minzu University & Tianjin University
14:30-15:00	Plenary 7: Machine learning aspects in PEM fuel cell research and development	Prof. WANG Yun, University of California, Irvine
15:00-15:30	Plenary 8: Carbon dioxide fixation by microalgae and biomass utilization	Prof. LIAO Qiang, Chongqing University
15:30-15:50	**Coffee/tea break**	
15:50-16:20	Plenary 9: Application of machine learning in thermochemical conversion of biomass and organic solid waste	Prof. WANG Shurong, Zhejiang University
16:20-16:50	Plenary 10: Hydrogen energy application and innovation	Prof. SHI Yixiang, Tsinghua University
16:50-17:20	Plenary 11: Unlocking net zero emissions in hard-to-transition transport sectors: Implications of fuel energy storage and carbon dioxide removal technologies	Prof. LIU Haifeng, Tianjin University
17:00-18:30	Editorial board meeting (blended online and onsite meeting in 6F Multi-function hall 1)	Host: Dr. ZHANG Jing
18:00-20:00	**Dinner at Hotel**	

Program - Day 2

Parallel session 1 (15 min presentation + 3 min Q/A)

Saturday Morning, August 12th, 2023 (Beijng Time: GMT+8)
Room 1: 6F Multi-function hall 1

Time	Program	Speaker
08:30-08:55	**Invited Talk: Deep learning diagnostic framework towards battery digital twins**	Prof. RUAN Haijun, Coventry University
08:55-09:13	018-Topology optimization of catalyst bed structure for a solar membrane reactor and performance enhancement mechanism	Dr. TANG Xinyuan , Xi'an Jiaotong University
09:13-09:31	024-A voltage degradation forecasting method of proton exchange membrane fuel cell based on transformer and its variants	Dr. HU Baobao , Xi'an Jiaotong University
09:31-09:49	003-Analysis of single particle model of li-ion batteries with neural network based AI algorithm	Dr. HUSSAIN Arif , Zhejiang Normal University
09:49-10:07	026-Multi-morphology and multi-scale microalgae identification and classification based on machine learning	Dr. YAN Huchao , Chongqing University
10:07-10:22	**Coffee/tea break**	
10:22-10:40	064-Machine learning based model predictive control of reactor network model for biomass gasification in supercritical water	Dr. WANG Cui , Xi'an Jiaotong University
10:40-10:58	010-Battery thickness expansion prediction via Seq2Seq learning under inconsistent measurement	Dr. JI Shanling, Southeast University
10:58-11:16	009-Performance prediction and optimization of multi-component fuel DIR-SOFC based on GA-optimized BP neural network model	Dr. CHEN Weiwen , Xi'an Jiaotong University
11:16-11:34	012-Performance simulation of photovoltaic arrays based on thermoelectric coupling model	Dr. HU Yu , Xi'an Jiaotong University
11:34-11:52	056-A hybrid direct ammonia fuel cell	Dr. LI Wenzhi , The Hong Kong Polytechnic University
12:00-14:00	**Lunch (buffet)**	

Parallel session 2 (15 min presentation + 3 min Q/A)

Saturday Morning, August 12th, 2023 (Beijng Time: GMT+8)
Room 1 :6F Multi-function hall 2

Time	Program	Speaker
08:30-08:55	**Invited Talk: AI-aided techno-economc analysis of gas-liquid-solid triple-phase contactors for CO_2 capture via enhanced weathering**	Prof. XING Lei, Surrey University
08:55-09:13	029-Configuration planning and operation strategy of an off-grid PV-wind-battery-hydrogen-storage hybrid energy system based on PSO algorithm	Dr. JIA Pengcheng , Tianjin University
09:13-09:31	007-Modelling and temperature control of air-cooled PEMFC using intelligent algorithm	Dr. CHEN Junhong, Xiʾan Jiaotong University
09:31-09:49	013-Multi-objective optimization of boiler NOx emissions and platen superheater overheating based on deep reinforcement learning	Dr. FAN Yuchen, Tianjin University
09:49-10:07	015-Solving adjoint navier-stokes equations based on physics-informed neural network in the framework of thermal topology optimization	Dr. JI Ritian , Xi'an Jiaotong University
10:07-10:22	**Coffee/tea break**	
10:22-10:40	030-Identify liquid water in transparent proton exchange membrane fuel cell with neural-network	Dr. CAI Saijie, Xi'an Jiaotong University
10:40-10:58	059-A comparative well-to-wheel life cycle assessment of methanol and hydrogen fuel cell vehicles	Dr. LI Jiaxuan , Chongqing University
10:58-11:16	054-A novel optimization method for channel/rib patterns of a proton exchange membrane fuel cell by combining a down-the-channel performance model and genetic algorithm	Dr. ZHOU Zihan , Shanghai Jiao Tong University
11:16-11:34	019-Time series health diagnosis system for PEMFC based on convolutional neural networks	Dr. GONG Zhichao , Tianjin University
11:34-11:52	072-Unsupervised learning-based data-driven modeling and global multi-objective optimization for organic Rankine cycle (ORC) under road environment	Dr. XU Ping, Beijing University of Technology
12:00-14:00	**Lunch (buffet)**	

Parallel session 3 (15 min presentation + 3 min Q/A)

Saturday Morning, August 12th, 2023 (Beijng Time: GMT+8)
Room 1: 6F Multi-function hall 3

Time	Program	Speaker
08:30-08:55	**Invited Talk: Special Issue Introduction**	Prof. ZAMEL Nada, Fraunhofer Institute for Solar Energy Systems
08:55-09:13	067-Multi-layer digital twin of PEMFC water states based on an improved deep learning with CBAM and Kalman filters	Dr. YUAN Xinjie , Shanghai Hydrogen Propulsion Technology Co.
09:13-09:31	060-A physics-informed learning framework for the time-efficient design of vanadium redox flow battery	Dr. JIA Xiongjie , Tianjin University
09:31-09:49	063-Thermo-electrochemical performance analysis towards efficient liquid-state thermocells	Dr.CAI Yuhao , Tianjin University
09:49-10:07	065-Research on PEMFC life estimation method based on decay mechanism model for hybrid vehicles	Dr. ZHANG Ruirui , Tongji University
10:07-10:22	**Coffee/tea break**	
10:22-10:40	017-Optimal design of airfoil fin parameters in printed circuit heat exchanger for supercritical CO2 Brayton cycle based on artificial neural network and multi-objective genetic algorithm	Dr. DING Jinneng , South China University of Technology
10:40-10:58	055-Natural gradient boosting-based battery state of charge estimation at very high C-rate operations	Dr. LI Guanzheng , Tianjin University
10:58-11:16	046-Exploring the impact of non-ideal behavior on modeling ignition delay time of ABE and its components using artificial intelligence and novel group contribution techniques	Dr. CHEN Yong , Tianjin University
11:16-11:34	001-The effect of carbon morphology on transport resistances in catalyst layers of PEMFC under different operating conditions	Dr. MU Yutong, Xi'an Jiaotong University
11:34-11:52	027-Industrial data-based framework for analyzing energy consumption and CO2 emissions of iron and steel sites	Dr. WANG Jiayang , Northeastern University
12:00-14:00	**Lunch (buffet)**	

Parallel session 4 (15 min presentation + 3 min Q/A)

Saturday Afternoon, August 12th, 2023 (Beijng Time: GMT+8)
Room 1 :6F Multi-function hall 1

Time	Program	Speaker
14:00-14:18	070-Performance study and structural optimization of all-vanadium flow battery based on dimensionless flow resistance ratio decoupling model	Dr. WU Ruobing , Xi'an Jiaotong University
14:18-14:36	051-Energizing fuel cells with green ammonia	Dr. LIU Yun , The Hong Kong Polytechnic University
14:36-14:54	008-Online energy management strategy for ammonia-hydrogen hybrid power system of heavy-duty vehicles based on deep reinforcement learning	Dr. CHEN Fujun , Tianjin University
14:54-15:12	041-Modeling and temperature control of proton exchange membrane fuel cells based on PSO-PID	Dr. YANG Kai, Tianjin University
15:12-15:30	042-Data-driven prediction of ionic thermoregulated energy conversion with deep learning	Dr. ZHU Huangyi , Xi'an Jiaotong University
15:30-15:45	**Coffee/tea break**	
15:45-16:03	023-Data-driven temperature field prediction of variable boundary condition-based porous media with deep learning	Dr. GUO ZiLing. , Xi'an Jiaotong University
16:03-16:21	049-State-space modeling for electrochemical performance of Li-ion batteries with physics-informed deep operator networks	Dr. ZHENG Qiang , Eastern Institute of Technology
16:21-16:39	044-Load forecasting of hybrid renewable energy systems based on EMD-LMBP algorithm	Dr. LI Bowen , Tianjin University
18:00-20:00	**Dinner**	

Parallel session 5 (15 min presentation + 3 min Q/A)

Saturday Afternoon, August 12th, 2023 (Beijng Time: GMT+8)
Room 1: 6F Multi-function hall 2

Time	Program	Speaker
14:00-14:18	062-Multi-objective optimization of catalyst layer of PEM fuel cell using a three-dimensional two-phase fuel cell model, surrogate model, and a multi-objective genetic algorithm	Dr. YANG Ziqian , Beijing Institute of technology
14:18-14:36	066-An air supply system for proton exchange membrane fuel cells combined with stack internal state sensing	Dr. ZHANG Pulin , Shanghai Jiao Tong University
14:36-14:54	053-A digital twin approach for mechanical behavior prediction in PEMFC stacks	Dr. LIAO Shuxin , Shanghai Jiao Tong University
14:54-15:12	004-Revealing O2 transport properties in ionomer films by coupling molecular dynamics simulation with machine learning	Dr.ZUO Ruiwang , Tianjin University
15:12-15:30	036-Optimization of current density and electrolyte flow rate in an all-vanadium redox flow battery with non-uniformly compressed electrode	Dr. WANG Q., Xiʼan University of Architecture and Technology
15:30-15:45	**Coffee/tea break**	
15:45-16:03	071-A convolutional propagation network for engine fault diagnosis with limited data	Dr. GOU Xin, Tianjin University
16:03-16:21	073-Transient optimal control of the CO2-based combined cooling and power system based on deep deterministic policy gradient algorithm	Dr. HE Jintao , University of Science and Technology of China
16:21-16:39	068-Development of a hybrid deep learning strategy to utilize concentrated solar radiation in high-temperature electrolysis	Dr. XU Haoran , Zhejiang University
18:00-20:00	**Dinner**	

Parallel session 6 (15 min presentation + 3 min Q/A)

Saturday Afternoon, August 12th, 2023 (Beijng Time: GMT+8)
Room 1: 6F Multi-function hall 3

Time	Program	Speaker
14:00-14:18	028-Intelligent optimization framework of steel production path considering process-based life cycle assessment	Dr. FANG Xiaoqing , Northeastern University
14:18-14:36	031-Camera-based flame monitoring system for natural gas combustion in rotary kilns using image recognition technology	Dr. FU Wenyu , Northeastern University
14:36-14:54	014-High resolution regional cooling demand prediction for net zero scenarios in London	Dr. ZHANG Meng , University of Glasgow
14:54-15:12	033-Prediction of laminar burning velocities for H2-NH3-CH4 ternary fuels mixture using multiple machine learning techniques	Dr. YASIRY Ahmed , Xi'an Jiaotong University&University of Babylon
15:12-15:30	045-Performance analysis and optimization of a pre-reformed methane-fueled stand-alone SOFC system for maximum system efficiency	Dr. HUO Haibo , Shanghai Ocean University
15:30-15:45	**Coffee/tea break**	
15:45-16:03	075-Investigation of the effect of injection rate shaping on in-cylinder combustion and emissions in heavy-duty diesel engines	Dr. SUN Haibo , Tianjin University
16:03-16:21	057-Dynamic analysis and data-driven predictive control of direct-ammonia solid oxide fuel cell	Dr. WANG Yang , Chongqing University
16:21-16:39	047-Numerical investigation on the lean-burn methanol in the main chamber with different active pre-chamber geometries and initial temperature	Dr. YAO Zhifeng , Tianjin University
18:00-20:00	**Dinner**	

Program - Day 3: Expedition to Qinghai Lake

The organizing committee has planned an expedition to Qinghai Lake after the reporting sessions. The committee has negotiated with the local resources to give our participants a preferential service. All participants in the ICEAI 2023 are welcome to register!

会议报告环节结束后，组委会规划了为期一天的青海湖考察活动。会务组经过与当地资源协商，拟安排如下考察活动，欢迎各位参会人员提前预约报名！

Main routes: 主要线路：

Xining - Jinyintan Dayu Tribe - Atomic City Monument - Qinghai lake "151" – Xining

西宁–金银滩达玉部落–原子城纪念碑–青海湖 "151"–西宁

Detailed routes：详细线路：

Jinyintan Prairie - Atomic City Monument - Great Qinghai Lake - car tour of the Inverted Flowing River - car tour of the Sun Moon Mountain

金银滩大草原+原子城纪念碑＋大美青海湖＋车览倒淌河＋车览日月山

Price: 280 RMB/person (the cost includes: car + guide fee + scenic first entrance fee + food + travel agency liability insurance)

价格：280 元/人（费用包含：车费＋导服费＋景区首道门票费＋中餐＋旅行社责任险）

Registration method: Onsite registration

报名/缴费方式：现场报名

Qinghai Lake

Qinghai Lake, the Tibetan name "Tso Wembu" (meaning "green sea"), is also the origin where the name of Qinghai Province comes from. It is located in the northeastern part of the Qinghai-Tibetan Plateau in Qinghai Province, formed by the Datong Mountain, Riyue Mountain, and Qinghai South Mountain between the fault fall, China's larger inland lakes. Qinghai Lake is vast, azure, and ethereal, with a circle of about 360 kilometers around the lake. There is the main scenic spot named Erlangjian in the southern part of the lake, where you can take a boat tour of the lake. The Bird Island is on the west side of the lake, where hundreds of thousands of birds are available for viewing and photographing from April to June every year. On the east side of the lake, there is the Sand Island Scenic Spot, which is mainly characterized by sandy beach scenery and recreation, as well as the famous Sun and Moon Mountains and the Inverted River, etc. The attractions of Gold and Silver Beach and Atomic City are located on the north side of the lake. Qinghai Lake is surrounded by mountains, while close to the lake is the vast grassland, the scenery is spectacularly beautiful, and there are many zones and landscapes to enjoy, which has become an indispensable place to visit in Qinghai.

青海湖

青海湖藏语名为"措温布"（意为"青色的海"）。位于青藏高原东北部、青海省境内，由祁连山脉的大通山、日月山与青海南山之间的断层陷落形成，是中国较大的内陆湖泊，也是青海省名称的由来。湖泊地域面积辽阔，环湖一圈约360公里，湖水浩瀚无边又蔚蓝空灵。湖的南处有主景区二郎剑景区，可以乘船游湖；西侧是鸟岛，每年4-6月有数十万只鸟类可供观赏拍摄；湖东以沙滩风光和娱乐为主的沙岛景区，有名的日月山、倒淌河等；北侧则有金银滩和原子城等景点。青海湖的周围被群山环抱，而贴近湖畔则是苍茫的草原，景色壮观优美，可供观赏的地带和景观很多，是游玩青海重要的景区。

Yajun Lamb (August 12th dinner)

A Restaurant opened more than 30 Years in Xining

Yajun Lamb is a halal restaurant started in 1988. Its dishes are full of local characteristics, many stars come to Xining to eat here.

Hand-grabbed mutton is a traditional local dish in Xining. Different from the mutton taste of the mainland plain, the mutton meat here is fresh and tender, and the entrance is fat but not greasy, and the oil does not smell.

Niang pi is a kind of solid food made from steamed flour. It is cool, flexible and delicate, with the local chili oil to eat together, spicy but not dry, very appetizing.

Ga mian pian is a local characteristic of Xining pasta. Its compact shape can be matched with different soups and sauces. There are many kinds of cooking ways of noodles, which can be made into noodles with soup, or fried food, etc.

Xining's yogurt is a solid form similar to the shape of bean curd. The surface of the yogurt is light milky yellow, the milk body is very white and tender. It's soft, smooth and full of texture.

The fermented grains are fermented so that their taste is similar to that of fermented rice. The finished products also have a mellow wine taste, and the taste is slightly sweet and refreshing. According to personal taste, locals also add fermented grains to various kinds of milk tea.