



1958-2023

Overview of the Institute of Process Engineering, Chinese Academy of Sciences

The Institute of Process Engineering (IPE), formerly known as the Institute of Chemical Metallurgy (ICM), at the Chinese Academy of Sciences (CAS), was established in 1958 by its founding scientist: Professor Chu-Phay Yap. Yap returned to China in the 1950s to help the country solve its strategic needs for steel. He proposed using chemical engineering theories to strengthen metallurgical processes.

In the 1970s, ICM, under the leadership of Professor Mooson Kwauk and Professor Jiayong Chen, expanded applications of chemical engineering theory into broader areas such as resources & environment, energy, and material manufacturing. In the 1980s, such efforts fostered the integration of chemical engineering and biotechnology. In the 1990s, ICM strengthened its research in engineering chemistry. Since the beginning of the 21st century, ICM positioned process engineering as its key research direction and placed spatiotemporal multiscale structural studies at its core. In 2001, ICM was renamed the Institute of Process Engineering (IPE), thus achieving a historic leap from a chemical-metallurgy-focused institute to a leading institute of process engineering.

Over the past decade, aiming to develop a green, intelligent, high-end process industry, IPE has developed a whole chain R&D mode covering laboratory research, pilot amplification and engineering demonstration. The institute devotes to solve major S&T problems that hinder economic and social development, focusing on the research of mesoscience and virtual engineering, chemical metallurgy, biochemical and pharmaceutical engineering, green chemical reaction and separation, fossil energy utilization, etc. and provides strong S&T support for the green upgrade of the process industry. In 2019, IPE took the lead, establishing the CAS Innovation Academy for Green Manufacturing to tackle industrial carbon neutrality. In the fields from low-carbon energy, mineral resources, green chemicals, and high-end materials to biomedicine, IPE aims to lead new industrial development by carrying out frontier research and developing forward-looking technologies.

Key Laboratories & Research Centers

IPE has **4** national R&D platforms and **5** provincial/ministerial level R&D platforms.

- State Key Laboratory of Mesoscience and Low-carbon Processes
- State Key Laboratory of Biopharmaceutical Preparation and Delivery
- National Engineering Research Center of Green Recycling for Strategic Metal Resources
- State Key Laboratory of Green and High-end Utilization of Salt Lake Resources

Awards/ Patents/ Papers

IPE has won **39** National Awards and **9** International Awards, acquired **208** international patent licenses.

591 Awards since the institute's establishment

3029 Patents granted in the past 10 years

9559 Papers published in the past 10 years

Talent Pyramid

IPE places emphasis on innovative mechanisms for talent cultivation. In particular, it supports career development of early-career researchers by capital-increasing and young researcher programs.

747 Faculty & Staff **1371** Graduate Students

- 5 CAS/CAE Members
- 18 NSFC Distinguished Young Scholars
- 87 Professors
- 78% < 45 years old

Achievement Transformation

IPE's S&T achievements have so far benefited over 1,000 enterprises throughout China and the world. Its engineering innovations have been employed by many *Fortune* Global 500 companies, including PetroChina, SINOPEC, TOTAL, BASF, and CATL. It has built over 100 complete, original facilities focused on pilot and industrial demonstration.

Campuses

IPE comprises of multiple campuses to combine³ original innovation, pilot demonstration, and industrialization.

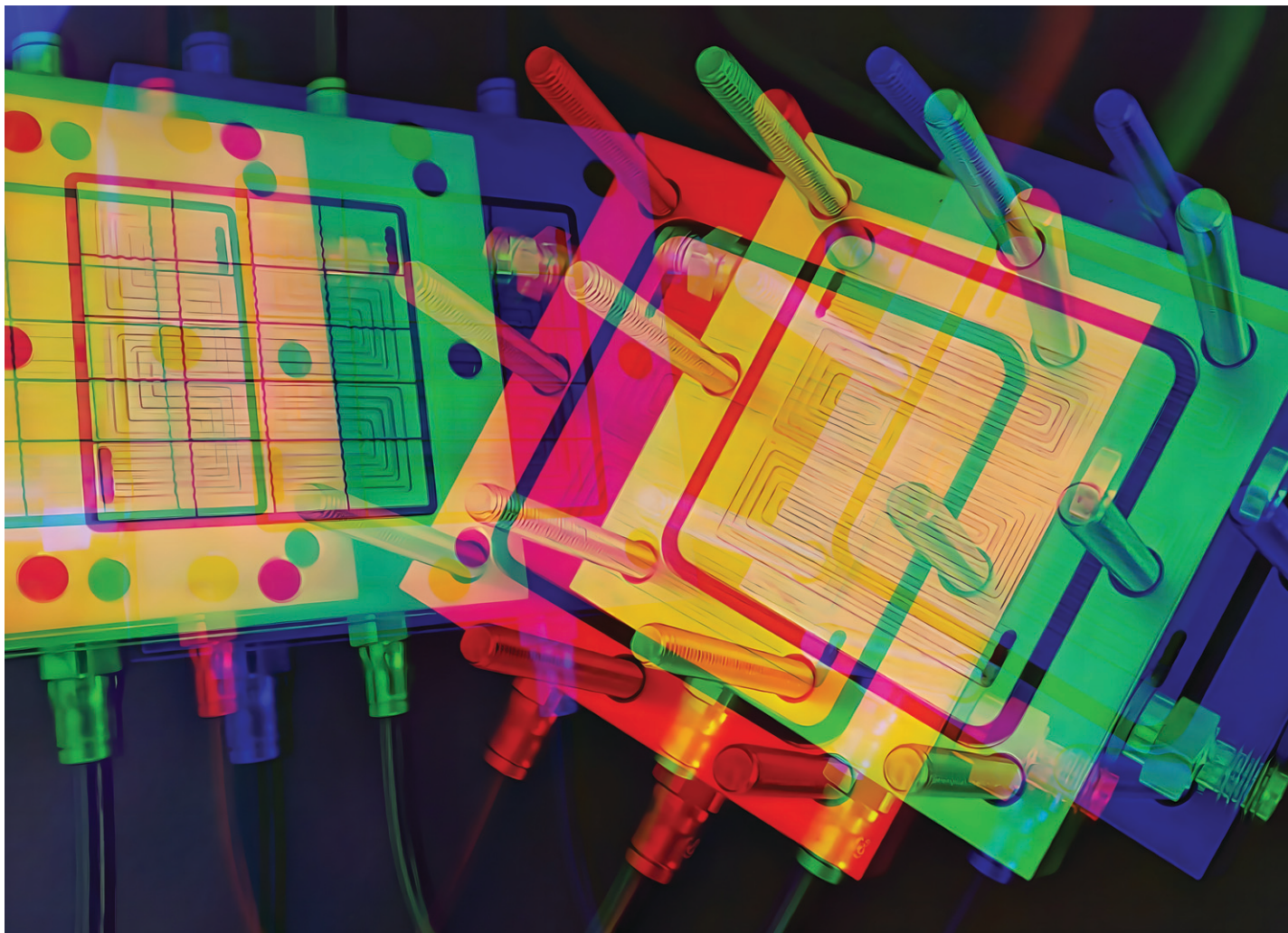
IPE Engineering Base (Langfang Campus)

IPE Mesoscience Center (Huairou Campus)

IPE has built a multi-layered and diverse international cooperation platform. It has partnered with over 50 world-famous research institutes and cross-border enterprises in collaborative programs, visitor exchanges, and talent cultivation. It initiated the International Panel of Mesosciences (IPM) and CAS-TWAS Centre of Excellence for Green Technology (CEGT).

IPE Zhongguancun Park (Main Campus)

Please learn more about IPE via its webpage: <http://english.ipe.cas.cn/>

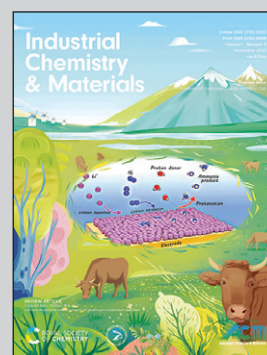


Showcasing research from Marian Chatenet's laboratory, CNRS, Grenoble INP (Institute of Engineering and Management Univ. Grenoble Alpes), LEPMI, Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, Grenoble, France.

Does the platinum-loading in proton-exchange membrane fuel cell cathodes influence the durability of the membrane-electrode assembly?

MEAs with various cathode Pt loadings were elaborated and aged using a multiple-stressor accelerated stress test (AST) in a segmented PEMFC.

As featured in:



See Marian Chatenet *et al.*,
Ind. Chem. Mater., 2023, 1, 501.