

Department Seminar

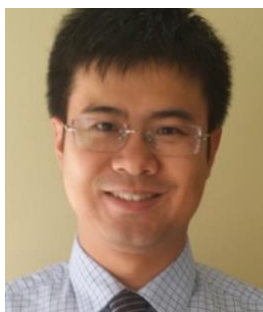
Dear Colleagues & Students,
You are cordially invited to a special seminar on

Date: 21 July 2026, Tuesday

Time: 10:30 - 12 am

Venue: EA-06-02, CDE, NUS ([Map](#))

Hydrogen Production and Related Chemical Processes



By Prof. Yijin Kang

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Chemical Engineering, Sichuan University, Chengdu, China

Hosted by Asst. Prof. Xianbiao Fu

Abstract:

Tianrui Technology is a company focusing on hydrogen production through water electrolysis. Proton exchange membrane (PEM) water electrolysis and anion exchange membrane (AEM) water electrolysis are our current direction of development. While the wide application of PEMWE is limited by iridium-based oxygen evolution reaction (OER) electrocatalysts, the major concern is the supply chain of iridium due to its scarcity. We work on searching for possible non-iridium OER electrocatalysts. Working at Sichuan University, we are trying to understand the instability of non-iridium electrocatalysts during water electrolysis. Teaming up with top energy companies in China, we are exploring the possible routes to produce green hydrogen at the industrial level.

Besides hydrogen production, relevant chemical processes for the hydrogen economy are also discussed. For instance, chemical upgrades involving carbon utilization are essential for decarbonizing the petrochemical industry; green ammonia and green methanol production are effective ways to digest green hydrogen; coupling hydrogen production with biomass utilization may further reduce the overall cost of hydrogen applications.

[1] Zhang, J.H.#; Fu, X.B.#; Soonho, K#; Chen, K.F.; Liu, X.Z.; Yang, J.; Sun, H.R.; Wang, Y.C.; Uchiyama, T.; Uchimoto, Y.; Li, S.F.; Li, Y.; Fan, X.L.; Chen, G.; Xia, F.J.; Wu, J.S.; Li, Y.B.; Yue, Q.; Qiao, L.; Su, D.; Zhou, H.; Goddard, W.A.*; Kang, Y.J.* *Tantalum-stabilized ruthenium oxide electrocatalysts for industrial water electrolysis*, *Science*, 2025, 387 (6729), 48-55

[2] Luc, W.#; Fu, X.B.#; Shi, J.J.; Lv, J.J.; Jouny, M.; Ko, B.H.; Xu, Y.B.; Tu, Q.; Hu, X.B.; Wu, J.S.; Yue, Q.; Liu, Y.Y.; Jiao, F.*; Kang, Y.J.* *Two-Dimensional Copper Nanosheets for Electrochemical Reduction of Carbon Monoxide to Acetate*, *Nature Catal.*, 2019, 2, 423-430

Biography:

Dr. Yijin Kang is the founder of Tianrui Technology, a company focusing on hydrogen and electrochemical technologies. Tianrui Technology won the First-place of 2025 National Innovation and Entrepreneurship Competition of China and received investment from major capital and a public listing company. Yijin Kang received a B.S. (chemistry) from Fudan University and a PhD (chemistry, Christopher Murray Group) from the University of Pennsylvania. He received the postdoctoral training at Argonne National Laboratory under the supervision of Dr. Vojislav Stamenkovic and Dr. Nenad Markovic. He was a Professor at the University of Electronic Science and Technology of China (2015-2020), Visiting Professor at Northwestern University (Evanston, 2015-2019), Adjunct Professor at the University of Illinois at Chicago (2017-2019), Professor at Sichuan University (2023-present).

Looking forward to seeing all of you!