

Dr. Shih-Yuan Chen



Chief Senior Researcher

Synthetic Fuel Production and Evaluation Research Team (FPET), Integrated Research Center for CCUS Implementation (Concurrent Position: Energy Catalyst Technology Research Group, Energy Process Research Institute (EPRI)), Department of Energy and Environment, National Institute of Advanced Industrial Science and Technology (AIST)

16-1 Onogawa, Tsukuba, Ibaraki 305-8569, Japan.

E-mail: sy-chen@aist.go.jp

Web pages:

<https://sites.google.com/view/shihyuanchen/home>;

<https://unit.aist.go.jp/epri/ecat-s/en/index.html>

Education:

2004.9~2008.6, Ph.D. in Inorganic Chemistry, Department of Chemistry, National Taiwan University (NTU), Taiwan.

2002.9~2004.6, MS, Department of Chemistry, National Taiwan University (NTU), Taiwan.

1999.9~2002.6, BS, Department of Chemistry, National Tsing-Hua University (NTHU), Taiwan.

Current Positions:

Chief Senior Researcher, AIST, Japan (2025.4~present).

Member, The Catalysis Society of Japan

Member, Kanadevia - AIST Collaborative Research Laboratory for Sustainable Green Energy Production

Experience:

Senior Researcher, AIST, Japan (2016.4~2025.3).

Researcher, AIST, Japan (2012.4~2016.3)

Postdoctoral Researcher, AIST, Japan (2012.2~2012.3)

Postdoctoral Researcher, NTU, Taiwan (2009.10~2012.1)

Visiting Scholar, Visiting Scholar, Tokyo Institute of Technology, Japan (2007.06~2007.09)

Project Coordinator,

NEDO Hydrogen Utilization and Other Pilot Research Development Project/Survey on Manufacturing Technology of Carbonized Hydrogen and Other Utilization and Diacidized Carbon and Emission of Hydrogen

(2018-2020, 2020-2022, https://www.nedo.go.jp/activities/ZZJP_100068.html)

SIP Energy Carrier (2016-2020, <https://www.jst.go.jp/sip/k04.html>)

JSP-SATREPS (2010-2016, https://www.jst.go.jp/global/english/kadai/h2110_thailand.html)

Research Interests:

Heterogeneous Catalysis: Energy Process (Biomass Conversion and Utilization, Ammonia Synthesis and Decomposition, Methane Cracking and Hydrogen Production, Direct Air Capture and Conversion, Gas Sorption), Porous Materials, In-situ Techniques; Pilot&Deomstrant Plants

Publications:

https://scholar.google.com/citations?hl=en&user=520EX7IAAAAJ&view_op=list_works&sortby=pub_date ~85 SCI papers; ~10 patents; Citations = ~2700; H index = ~23 (Google Scholar)

Selected publications:

1. Keller Martin,* **Shih-Yuan Chen**, Sharma Atul, Redox-mediated reverse water gas shift integrated with ammonia cracking over Ni/La_{0.75}Sr_{0.25}Cr_{0.5}Mn_{0.5}O₃, *Chemical Engineering Journal Advances*, **2025**, 100713. (<https://doi.org/10.1016/j.ceja.2025.100713>)
2. Tomone Sasayama, Yuya Ono, Fumihiko Kosaka,* Yanyong Liu, **Shih-Yuan Chen**, Takehisa Mochizuki, Koichi Matsuoka, Atsushi Urakawa, Koji Kuramoto, Continuous CO₂ capture and reduction to CO by circulating transition-metal-free dual-function material in fluidized-bed reactors, *Separation and Purification Technology*, **2025**, (354), 128602. (<https://doi.org/10.1016/j.seppur.2024.128602>)
3. Hsin-Yu Chen, **Shih-Yuan Chen**,* Yves Ira A Reyes, Martin Keller, Takehisa Mochizuki, Chien-Neng Liao, Hsin-Yi Tiffany Chen,* Promoter Effect of ammonia synthesis over ruthenium catalysts: A review, *EnergyChem*, **2024**, 6(6) 100140 (<https://doi.org/10.1016/j.enchem.2024.100140>).
4. Ahmed M. Elewa, Islam M. A. Mekhemer, Ahmed F. M. EL-Mahdy, Amr Sabbah, **Shih-Yuan Chen**, Li-Yu Ting, Taher A. Gaber, Ho-Hsiu Chou,* Room-Temperature Synthesis of Covalent Organic Frameworks using Gamma-Irradiation in Open-Air Conditions, *Small*, **2024**, 20, 2311472. (<https://doi.org/10.1002/sml.202311472>)
5. **Shih-Yuan Chen**,* Li-Yu Wang, Kai-Chun Chen, Cheng-Hsi Yeh, Wei-Chih Hsiao, Hsin-Yu Chen, Masayasu Nishi, Martin Keller, Chih-Li Chang, Chien-Neng Liao, Takehisa Mochizuki, Hsin-Yi Tiffany Chen,* Ho-Hsiu Chou,* Chia-Min Yang,* Ammonia synthesis over cesium-promoted mesoporous-carbon-supported ruthenium catalysts: Impact of graphitization degree of the carbon support, *Applied Catalysis B: Environmental and Energy*, **2024**, 346(5) 123725. (<https://doi.org/10.1016/j.apcatb.2024.123725>)
6. Hiroyuki Tateno,* **Shih-Yuan Chen**, Genki Horiguchi, Takehisa Mochizuki, The Effect of Adding Glycerol in Hydrogen Production Using AEM Reactor, *Electrochemical Society Meeting Abstracts prime2024*, **2024**, 53, 3633-3633. (10.1149/MA2024-02533633mtgabs)
7. Thanadon Supabunnapong, Artita Na Rungsi, Apanee Luengnaruemitchai,* **Shih-Yuan Chen**,* Takehisa Mochizuki, Natthida Numwong, Nuwong Chollacoops, Effects of synthetic conditions on the Pd particle sizes of Pd/SBA-15 catalysts and their performance for the partial hydrogenation of biodiesel fuels, *Biomass Conversion and Biorefinery*, **2024**, 14, 16005–16018.

(<https://link.springer.com/article/10.1007/s13399-023-03859-w>)

8. Wenye Xuan, Yu-Hao Liu, **Shih-Yuan Chen**, Matthew S Dyer, Hsin-Yi Tiffany Chen,* Unveiling the Morphology of Carbon-Supported Ru Nanoparticles by Multiscale Modeling, *Nano Letter*, **2024**, 24, 2689–2697. (<https://pubs.acs.org/doi/full/10.1021/acs.nanolett.3c03796>)
9. Masayasu Nishi,* **Shih-Yuan Chen**, Takehisa Mochizuki, The role of carbon supports for Ru-based catalysts in ammonia decomposition: A review, *Carbon Reports*, 2024, 3(1), 2-10. (https://www.jstage.jst.go.jp/article/carbon/3/1/3_030105/_article/-char/ja/)
10. Monruedee Srida, **Shih-Yuan Chen***, Siwaporn Mejoo Smith, Chawalit Ngamcharussrivichaid, Supakorn Boonyuen, Hiroyuki Tateno, Takehisa Mochizuki, Apanee Luengnaruemitchaia,* Bifunctional mesoporous silica solid acids for transformation of glucose to 5-hydroxymethylfurfural, *Materials Today Sustainability*, **2023**, 24, 100470. (DOI: <https://doi.org/10.1016/j.mtsust.2023.100470>)
11. Artita Na Rungsi, Apanee Luengnaruemitchaia,* Nuwong Chollacoop, **Shih-Yuan Chen***, Takehisa Mochizuki, Hideyuki Takagi, Yuji Yoshimura, Performance and sulfur poisoning of SiO₂, γ-Al₂O₃ and SiO₂-Al₂O₃-supported bimetallic Pd-Pt catalysts for partial hydrogenation of soybean oil-derived FAME, *Fuel*, **2023**, 331, 125919. (<https://doi.org/10.1016/j.fuel.2022.125919>)
12. Chih-Li Chang, Wei-Cheng Lin, Li-Yu Ting, Chin-Hsuan Shih, **Shih-Yuan Chen**, Chia-Yeh Lu, Hiroyuki Tateno, Jayachandran Jayakumar, Che-Yi Chu, Chin-Wen Chen, Chi-Hua Yu, Yu-Jung Lu, Takehisa Mochizuki, and Ho-Hsiu Chou,* Boosting visible-light-driven hydrogen evolution of polymer photocatalysts by a universal main-chain-engineering strategy of hydrophilic non-conjugated building blocks, *Nature Communications*, **2022**, 13 (1), 1-11. (<https://doi.org/10.1038/s41467-022-33211-1>)
13. Masayasu Nishi,* **Shih-Yuan Chen***, Hiroyuki Tateno, Takehisa Mochizuki, Hideyuki Takagi, and Tetsuya Nanba, A Super-growth Carbon Nanotubes-supported, Cs-promoted Ru Catalyst for 1-8 MPaG Ammonia Synthesis, *Journal of Catalysis*, **2022**, 413, 623-635. (<https://doi.org/10.1016/j.jcat.2022.07.015>).
14. Fumihiko Kosaka*, Tomone Sasayama, Yanyong Liu, **Shih-Yuan Chen**, Takehisa Mochizuki, Koichi Matsuoka, Atsushi Urakawa, and Koji Kuramoto, Continuous CO₂ Capture and CH₄ Production using Dual Function Materials in a Circulating Fluidized Bed System, *Chemical Engineering Journal*, **2022**, 450, Part 2, 138055. (<https://doi.org/10.1016/j.cej.2022.138055>).
15. Hiroyuki Tateno,* **Shih-Yuan Chen**, Yugo Miseki, Tomohiko Nakajima, Takehisa Mochizuki, Kazuhiro Sayama Photo-electrochemical Oxidation of Glycerol to Dihydroxyacetone over Acid resistant Ta:BiVO₄ photoanodes, *ACS Sustainable Chemistry & Engineering*, **2022**, 10, 23, 7586–7594. (<https://doi.org/10.1021/acssuschemeng.2c01282>).