Meijia Li

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EXPERIENCE

Postdoctoral Research Associate
Oak Ridge National Laboratory

January 2022 – Now

EDUCATION

PhD in Materials Science and Engineering
Michigan Technological University, Houghton, MI
Doctoral advisor: Prof. Yun Hang Hu

August 2017 – December 2021

B.S. in Chemistry, Jiamusi University, Jiamusi, China

August 2012 - June 2016

RESEARCH EXPERIENCE

Project The investigation of heterogeneous catalyst for dry reforming of methane (DRM).　　(Sep. 2019 - present)

Unveiled the mechanism of coking resistance over NiO/MgO solid solution catalyst for dry reforming of methane

- ✧ Developed the highly active and stable NiO/MgO solid solution catalyst.
- ✧ Investigated the structural evolution of the catalyst under the catalytic conditions.
- ✧ Discovered the unique interaction between metallic Mg and Ni and its importance on the superior coking resistance of the catalyst.

Revealed the importance of moderate metal support interaction for stabilizing Al_2O_3-supported catalyst for DRM.

- ✧ Prepared the Al_2O_3-supported Ni catalyst with high activity and superior stability.
- ✧ Uncovered the catalyst stabilization during the catalytic process.
- ✧ Highlighted the importance of moderate metal support interaction for improving the catalyst performance.

Skills Heterogenous catalyst preparation (impregnation, sol-gel, combustion methods), characterization (STEM, TEM, SEM, XRD, XPS, TPR, TG, BET, FTIR, UV-vis, etc.), and evaluation under thermo catalytic conditions (GC)

Involved project Hydrogen production by Steam reforming of methane　　(June 2018 - Sep. 2019)

Hydrogen production via steam reforming reaction under thermo-photo hybrid process

Prepared a light-diffuse-reflection-surface substrate for photocatalyst which could profoundly increase the light utilization efficiency and assisted the TiO_2-based catalyst preparation and catalyst testing

Skills Thermo-photo catalytic heterogenous catalyst evaluation

Involved project Polyoxometalate-encapsulated smart silver cluster　　(Sep. 2015 - June 2016)

- ✧ Prepared the silver cluster by self-assembly using solvothermal method
- ✧ Discovered the smart structure transformation of silver cluster in response to the external acid-base stimuli

Skills Self-assemble silver cluster by solvothermal process, single-crystal X-ray crystallography

RESEARCH INTERESTS

- Heterogeneous catalyst design and application
- 2D Materials for energy-related applications
- Self-assemble of noble metal (Au, Ag) cluster

PUBLICATIONS

1. **Meijia Li**, Siyuan Fang and Yun Hang Hu. Self-stabilization of Ni/Al_2O_3 Catalyst with an Isolating $NiAl_2O_4$ Layer in Dry Reforming of Methane. *Catalysis Letters*, 2021.

2. **Meijia Li**, Zhuxing Sun and Yun Hang Hu. *Chemical Engineering Journal* 428, 2022, 131222.

3. **Meijia Li**, Zhuxing Sun and Yun Hang Hu. *J. Mater. Chem. A* 2021, 9, 12495.

4. Rattapol Pinnaratip, Pegah Kord Forooshani, **Meijia Li**, Yun Hang Hu. Rupak M. Rajachar, and Bruce P. Lee. *ACS Biomater. Sci. Eng.*, 2020, 6, 8, 4502–4511.

5. Bing Han, Wei Wei, **Meijia Li**, Kai Sun and Yun Hang Hu. *Chem. Commun.* 2019, 55, 7816-7819.

6. Wei Wei, **Meijia Li**, and Yun Hang Hu. *Ind. Eng. Chem. Res.* 2019, 58, 20, 8743–8749.

7. Hong Liu, Chao-Yu Song, Ren-Wu Huang, Hong Xu, **Meijia Li**, Shuang-Quan Zang, Guang-Gang Gao. *Angew. Chem. Int. Ed.* 2016, 55, 3699.

8. Chao-Yu Song, **Meijia Li**, Hong Liu, Guang-Gang Gao. Polyoxovanadate templated silver(i)-thiolate cluster. The 9th National Conference of Inorganic Chemistry, Nanchang, Jiangxi, 2015.