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EDUCATION

The University of Texas at Austin

Ph.D. in Chemical Engineering with Drs. C. Grant Willson and Nathaniel A. Lynd 2019
Dissertation: “*Functional Organic Materials for Directed Self-assembly of Silicon-containing Block Copolymers*”

Seoul National University

M.S. in Chemical and Biological Engineering with Dr. Kookheon Char 2013
B.S. in Chemical and Biological Engineering, *Cum Laude* 2011

EXPERIENCE

Korea Institute of Science and Technology (KIST)

Senior Research Scientist, Clean Energy Research Center 2020–Pres.
Research Scientist, Clean Energy Research Center 2013–2016

HONORS AND AWARDS

Kwanjeong Educational Foundation Fellowship 2016–2019
Graduate Dean's Prestigious Fellowship, UT Austin 2016–2019
Bronze Prize, Samsung HumanTech Paper Award 2013
Superior Academic Performance Scholarship, Seoul National University 2012
BK21 Scholarship, National Research Foundation (NRF) of Korea 2011–2012
National Undergraduate S&T Scholarship, Korea Science and Engineering Foundation 2007–2011
Gwangju Institute of Science and Technology (GIST) Scholarship 2006
Bronze Prize, Korean Chemistry Olympiad (KChO) 2005

PUBLICATIONS

[\[Google Scholar\]](#)

13. **Koh, J. H.**[†]; Zhu, Q.[‡]; Asano, Y.; Maher, M. J.; Ha, H.; Kim, S.-S.; Cater, H. L.; Mapesa, E. U.; Sangoro, J. R.; Ellison, C. J.; Lynd, N. A.; Willson, C. G.* Unusual Thermal Properties of Certain Poly(3,5-disubstituted styrene)s. *Macromolecules* **2020**, *53*, 5504–5511. [\[doi\]](#)
12. Doise, J.; **Koh, J. H.**; Kim, J. Y.; Zhu, Q.; Kinoshita, Natsuko; Suh, H. S.; Delgadillo, P. R.; Vandenberghe, G.; Willson, C. G.; Ellison, C. J.* Strategies for Increasing the Rate of Defect Annihilation in the Directed Self-Assembly of High- χ Block Copolymers. *ACS Appl. Mater. Interfaces* **2019**, *11*, 48419–48427. [\[doi\]](#)
11. **Koh, J. H.**[†]; Won, D. H.[‡]; Eom, T.[‡]; Kim, N. K.; Jung, K. D.; Kim, H.*; Hwang, Y. J.*; Min, B. K.* Facile CO₂ Electro-Reduction to Formate via Oxygen Bidentate Intermediate Stabilized by High-Index Planes of Bi Dendrite Catalyst. *ACS Catal.* **2017**, *7*, 5071–5077. [\[doi\]](#)
10. Sung, Y.; Lim, J.; **Koh, J. H.**; Min, B. K.; Pyun, J.*; Char, K.* Arm Length Dependency of Pt-

- Decorated CdSe Tetrapods on the Performance of Photocatalytic Hydrogen Generation. *Korean J. Chem. Eng.* **2016**, *33*, 2287–2290. [[doi](#)]
9. Jee, M. S.; Jeon, H. S.; Kim, C.; Lee, H.; **Koh, J. H.**; Cho, J.; Min, B. K.*; Hwang, Y. J.* Enhancement in Carbon Dioxide Reduction Activity and Stability on Nanostructured Silver Electrode and the Role of Oxygen. *Appl. Catal., B* **2016**, *180*, 372–378. [[doi](#)]
 8. Nursanto, E. B.; Jeon, H. S.; Kim, C.; Jee, M. S.; **Koh, J. H.**; Hwang, Y. J.*; Min, B. K.* Gold Catalyst Reactivity for CO₂ Electro-Reduction: From Nano Particle to Layer. *Catal. Today* **2016**, *260*, 107–111. [[doi](#)]
 7. **Koh, J. H.**; Jeon, H. S.; Jee, M. S.; Nursanto, E. B.; Lee, H.; Hwang, Y. J.*; Min, B. K.* Oxygen Plasma Induced Hierarchically Structured Gold Electrocatalyst for Selective Reduction of Carbon Dioxide to Carbon Monoxide. *J. Phys. Chem. C* **2015**, *119*, 883–889. [[doi](#)]
 6. Sung, Y.; Lim, J.; **Koh, J. H.**; Hill, L. J.; Min, B. K.; Pyun, J.*; Char, K.* Uniform Decoration of Pt Nanoparticles on Well-Defined CdSe Tetrapods and Their Effect of Pt Cluster Size on the Photocatalytic H₂ Generation. *CrystEngComm* **2015**, *17*, 8423–8427. [[doi](#)]
 5. Jeon, H. S.; **Koh, J. H.**; Park, S. J.; Jee, M. S.; Ko, D.; Hwang, Y. J.*; Min, B. K.* A Monolithic and Standalone Solar-Fuel Device Having Comparable Efficiency to Photosynthesis in Nature. *J. Mater. Chem. A* **2015**, *3*, 5835–5842. [[doi](#)] [[back cover](#)]
 4. Yoon, H.*; Sung, S. H.; **Koh, J. H.**; Kim, S. M.; Choi, S. J.; Suh, K. Y.; Char, K.* Directional Step Flow across Ridges on Multiscale Two-Face Prism Array. *Macromol. Res.* **2015**, *23*, 145–148. [[doi](#)]
 3. Wooh, S.†; **Koh, J. H.**† (co-first); Lee, S.; Yoon, H.*; Char, K.* Trilevel-Structured Superhydrophobic Pillar Arrays with Tunable Optical Functions. *Adv. Funct. Mater.* **2014**, *24*, 5550–5556. [[doi](#)] [[inside front cover](#)]
 2. Wooh, S.; Yoon, H.; Jung, J. H.; Lee, Y. G.; **Koh, J. H.**; Lee, B.; Kang, Y. S.*; Char, K.* Efficient Light Harvesting with Micropatterned 3D Pyramidal Photoanodes in Dye-Sensitized Solar Cells. *Adv. Mater.* **2013**, *25*, 3111–3116. [[doi](#)]
 1. Kim, S. M.†; Kang, D. H.†; **Koh, J. H.**; Suh, H. S.; Yoon, H.*; Suh, K.-Y.*; Char, K.* Thermoresponsive switching of liquid flow direction on a two-face prism array. *Soft Matter* **2013**, *9*, 4145–4149. [[doi](#)] [[front cover](#)]

PATENTS

11. “Electrocatalyst for CO₂ reduction and method for manufacturing the same,” Hyung Suk Oh, Woong Hee Lee, Chul Wan Lim, Byoung Koun Min, Yun Jeong Hwang, Ung Lee, Dong Ki Lee, Da Hye Won, **Jai Hyun Koh**. KR Patent Application No. 2020-0058372.
10. “Electrochemical device that can produce liquid products with high efficiency,” Hyung Suk Oh, Woong Hee Lee, Byoung Koun Min, Yun Jeong Hwang, Ung Lee, Dong Ki Lee, Da Hye Won, **Jai Hyun Koh**. KR Patent Application No. 10-2020-0029669.
9. “Iridium alloy catalyst having reversible catalytic activity and preparation method thereof,” Hyung Suk Oh, Woong Hee Lee, Byoung Koun Min, Yun Jeong Hwang, Ung Lee, Dong Ki Lee, Da Hye Won, **Jai Hyun Koh**. KR Patent Application No. 10-2020-0029668.

8. "A hydrogen production and storage system using solar energy independently operated without external power," Ung Lee, Byoung Koun Min, Hyunjoo Lee, Yun Jeong Hwang, Hyung Suk Oh, Dong Ki Lee, Da Hye Won, **Jai Hyun Koh**, Donggu Han. KR Patent Application No. 10-2020-0034865.
7. "Self-driving electrochemical cell," Ung Lee, Byoung Koun Min, Hyunjoo Lee, Yun Jeong Hwang, Hyung Suk Oh, Dong Ki Lee, Da Hye Won, **Jai Hyun Koh**, Kyeongsu Kim. KR Patent Application No. 10-2020-0029670.
6. "Photoelectrode for hydrogen generation in solar water splitting and manufacturing method thereof," Dong Ki Lee, Byoung Koun Min, Byung Woo Kim, Yun Jeong Hwang, Hyung Suk Oh, Ung Lee, **Jai Hyun Koh**. US Patent Application No. 16/804,001.
5. "Photoelectrode for hydrogen generation in solar water splitting and manufacturing method thereof," Dong Ki Lee, Byoung Koun Min, Byung Woo Kim, Yun Jeong Hwang, Hyung Suk Oh, Ung Lee, **Jai Hyun Koh**. KR Patent Application No. 2020-0017903.
4. "Nickel based electrocatalyst for water oxidation and process of preparing the same," Yun Jeong Hwang, Byoung Koun Min, Hyo Sang Jeon, **Jai Hyun Koh**. KR Patent Application No. 2015-0158885.
3. "Photoelectrochemical artificial photosynthesis device," Byoung Koun Min, Yun Jeong Hwang, **Jai Hyun Koh**, Hyo Sang Jeon. KR Patent Application No. 2015-0036172.
2. "Carbon dioxide reduction electrode and the preparation method thereof," Byoung Koun Min, **Jai Hyun Koh**, Yun Jeong Hwang. KR Patent Registration No. 10-1636024.
1. "Selective reducing method of carbon dioxide using silicon nanowire and pyridine," Yun Jeong Hwang, Byoung Koun Min, Oh Shim Joo, **Jai Hyun Koh**, Sang Jun Sim, Hyo Sang Jeon, Michael Shincheon Jee. KR Patent Registration No. 10-1566471.

SELECTED ORAL PRESENTATIONS

[Invited] American Chemical Society (ACS) Fall 2019 National Meeting, "Selective grafting of polymer brushes enables directed self-assembly of high- χ block copolymers," San Diego, CA, August 26th, 2019.

2019 SPIE Advanced Lithography Conference, "Selective grafting of polymer brushes for directed self-assembly of high- χ block copolymers," San Jose, CA, February 27th, 2019.

American Chemical Society (ACS) Fall 2015 National Meeting, "Electrochemical CO₂ conversion catalysts for integrated monolithic solar-fuel generators," Boston, MA, August 16th, 2015.

2014 Materials Research Society (MRS) Spring Meeting & Exhibit, "Photoelectrochemical CO₂ Conversion for Fuel Production Powered by Monolithic Thin-Film Photovoltaic Devices," San Francisco, CA, April 24th, 2014.