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Education

National Renewable Energy Laboratory Golden, CO
Postdoctoral Fellow, National Center for Photovoltaics, March 2010 – January 2013
Research focused on nanostructured Si materials synthesis for photovoltaics and photoelectrochemical solar fuels production.

Massachusetts Institute of Technology Cambridge, MA
Doctor of Philosophy, Department of Materials Science and Engineering, February 2010
Thesis: Porous Aluminum Oxide Scaffolds; Formation Mechanisms and Applications.

Seoul National University Seoul, Korea
Master of Science, Department of Materials Science and Engineering, February 2002
Thesis: A study on the adsorption of nanometer-sized colloidal γ-Fe_2O_3 particles on different substrates (Si, Si_3N_4, and SiO_2).

Pohang University of Science and Technology Pohang, Korea
Bachelor of Science, Materials Science and Engineering, February 2000

Work Experience

Korea Advanced Institute of Science and Technology (KAIST), Daejon, Korea
Adjunct Associate Professor, Department of Materials Science and Engineering 2018 – Present
Associate Professor, Graduate School of EEWS 2017 – Present
Assistant Professor, Graduate School of EEWS 2013 – 2017

Electronics and Telecommunications Research Institute (ETRI), Daejon, Korea
Research Engineer, NanoElectronic Devices Team 2002 – 2004

Awards

2018 Technology Innovation Award, KAIST
2017 Kavli Frontiers of Science Fellow
2014 The 1st Young Investigator Award, Korean Chemical Society (Environment and Energy Division)
2011 Gordon Battelle Prize for Technology Impact, Nominated.

Book Chapters and Books

1. U. Sim, K. Jin, S. Oh, D. Jeong, J. Moon, **J. Oh*** and K.T. Nam*, Hydrogen Production by Electrolysis and Photoelectrochemical System", Handbook of Clean Energy System. (Jinyue Yan (Eds.), Wiley-Blackwell, Hoboken (2014).

Selected Publications

1. B. Kim*, H. Seong*, J.T. Song, K. Kwak, H. Song, Y.C. Tan, D. Lee*, and **J. Oh***, Over a 15.9% solar-to-CO conversion from dilute CO_2 streams catalyzed by gold nanoclusters

exhibiting a high CO_2 binding affinity, *ACS Energy Letters*, DOI:10.1021/acsenergylett.9b02511 (2020).

2. B.-I. Park, J.-S. Park, S. Yu, S.-H. Cho, **J. Oh***, S.Y. Lee*, Hollow/porous-walled SnO_2 via nanoscale Kirkendall diffusion with irregular particles, Acta Materialia, DOI: 10.1016/j.actamat.2019.12.039 (2020).

3. S. Park, J. Simon, K.L. Schulte, A.J. Ptak, J. Wi, D.L. Young, and **J. Oh***, Germanium-on-nothing for epitaxial liftoff of GaAs solar cells, *Joule* 3, 1782 (2019).

4. M. Cho‡, J.M. Kim‡, B. Kim, S. Yim, Y.J. Kim, Y.S. Jung*, and **J. Oh***, Versatile, transferrable 3-dimensionally-nanofabricated Au catalysts with high-index crystal planes for highly efficient and robust electrochemical CO_2 Reduction, *Journal of Materials Chemistry A* 7, 6045 (2019). ‡These authors equally contributed

5. S. Oh, S. Jung, Y.H. Lee, J.T. Song, T.H. Kim, D.K. Nandi, S.-H. Kim*, and **J. Oh***, Hole-selective CoOx/SiOx/Si Heterojunctions for Photoelectrochemical Water Splitting, *ACS Catalysis* 8, 9755 (2018).

6. M. Cho‡, J.T. Song‡, S. Back‡, Y. Jung*, and **J. Oh***, The role of adsorbed CN and Cl on Au electrode for electrochemical CO_2 reduction, *ACS Catalysis* 8, 1178 (2018). (‡These authors equally contributed)

7. H. Song, S. Oh, H. Yoon, K.-H. Kim*, S. Ryu*, and **J. Oh***, Bifunctional NiFe inverse opal electrocatalysts with heterojunction Si solar cells for 9.54%-efficient unassisted solar water splitting, *Nano Energy* 42, 1 (2017).

8. S. Oh, H. Song, and **J. Oh***, An optically and electrochemically decoupled monolithic photoelectrochemical cell for high performance solar-driven water splitting, *Nano Letters* 17, 5416 (2017).

9. J.T. Song, H. Ryoo, M. Cho, J. Kim, J.-G. Kim, S.-Y. Chung, and **J. Oh***, Nanoporous Au thin films on Si photoelectrodes for selective and efficient photoelectrochemical CO_2 reduction, *Advanced Energy Materials* 7, 1601103 (2017).

10. S. Oh and **J. Oh***, High performance and stability of micropatterned oxide-passivated photoanodes with local catalysts for photoelectrochemical water splitting, *The Journal of Physical Chemistry C* 120 (1), 133 (2016).

11. M. Otto, B. Gesemann, X. Li, J. Ziegler, A.N. Sprafke, M. Algasinger, S. Koynov, H.M. Branz, **J. Oh**, T. Gimpeland, S. Kontermann, K. Füchsel, T. Käsebier, M. Zilk, V. Naumann, and R. Wehrspohn, Black silicon photovoltaics, *Advanced Optical Materials* 3, 147 (2014).

12. **J. Oh***, H.-C. Yuan, and H.M. Branz, An 18.2%-efficient black silicon solar cell achieved through control of carrier recombination, *Nature Nanotechnology* 7, 743(2012).

13. **J. Oh***, T.G. Deutsch, H.-C. Yuan, and H.M. Branz, Nanoporous black silicon photocathode for H_2 production by photoelectrochemical water splitting, *Energy and Environmental Science* 4, 1690 (2011).

14. **J. Oh**, and C.V. Thompson, The role of electric field in pore formation during aluminum, *Electrochimica Acta* 56, 4044 (2011).

15. **J. Oh**, and C.V. Thompson, Selective barrier perforation in porous alumina anodized on substrates. *Advanced Materials* 20, 1368 (2008).

16. T.-S. Yoon, **J. Oh**, S.-H. Park, V. Kim, B.G. Jung, S.-H. Min, J. Park, T. Hyeon, and K.-B. Kim, Single and multiple dip-coating process of colloidal maghemite (γ-Fe_2O_3) nanoparticles on various substrates (Si, Si_3N_4, and SiO_2), *Advanced Functional Materials* 14, 1062 (2004).