SYED MUBEEN JAWAHAR HUSSAINI
Assistant Professor of Chemical and Biochemical Engineering
University of Iowa
4139 Seamans Center for the Engineering Arts and Sciences, Room 4139, Iowa City, IA 52242
syed-mubeen@uiowa.edu │ (319)-335-5813 (office)

Education:

Ph.D.	University of California, Riverside (Advisor: Nosang V. Myung and Marc A. Deshusses)	2009
M.E.	Birla Institute of Technology and Science, Pilani	2004
B.Tech.	Central Electrochemical Research Institute, Karaikudi	2002

Professional Appointment:

Assistant Professor of Chemical and Biochemical Engineering, UI	2014-present
Postdoctoral scholar, Department of Chemical Engineering, UCSB (Advisor: Eric W. McFarland)	2012-2014
Postdoctoral scholar, Department of Chemistry and Biochemistry, UCSB (Advisor: Martin Moskovits and Galen D. Stucky)	2009-2014
Lead scientist, HyperSolar Inc., Santa Barbara	2012-2014
Research intern, Seagate Technology, Pittsburgh, PA, USA	2008-2009

Selected External Professional Activity:

Scientific Advisory Board, UEP Inc., New York	2013
Journal Reviewer for: ACS Nano, Journal of Physical Chemistry, Analytical Chemistry, Journal of Materials Chemistry, Biochemical Engineering Journal, Synthetic Metals, Environmental Pollution, Journal of Visual Experiments, etc.	2009-present

Present Research Interests:

- Electrochemical Synthesis of Functional Nanomaterials
- Electrochemical Energy Conversion and Storage Technologies
- Solar Fuels and Chemicals
- Surface Plasmon mediated Chemical and Electrochemical Processes
- Photovoltaics using Earth Abundant Elements
- Nanoelectronic Probes for Sensing Applications

Publications and Patents:

- 28 peer reviewed journal publications
- 1 issued and 4 pending US patents on gas sensors, photoelectrocatalysis, and batteries
- Work on plasmonic photosynthesis featured on cover of Nature Nanotechnology and Convergence magazine (UCSB)

Publications:

2014

1. Mubeen S., Lee J., Lee W-R., Singh N., Stucky G.D., & Moskovits M, "On the Plasmonic Photovoltaic", ***ACS Nano***, 8, 6066.

2. Singh N., Mubeen S., Lee J., Metiu H., Moskovits M., & McFarland E.W., "Stable Electrocatalysts for Autonomous Photoelectrolysis of Hydrobromic Acid using Single-Junction Solar Cells", ***Energy & Environmental Science***, Advance Article, DOI: 10.1039/C3EE43709D

3. Economou, N.E., Mubeen S., Buratto S.K., McFarland E.W., "Investigation of Arrays of Photosynthetically Active Heterostructures Using Conductive Probe Atomic Force Microscopy", ***Nano Letters***, Articles ASAP (As Soon As Publishable) **DOI:** 10.1021/nl500754q

2013

1. Mubeen S., Lee J., Singh N., Stucky G.D., & Moskovits M, "An Autonomous Photosynthetic Device in which all of the Charge Carriers Derive from Surface Plasmons", ***Nature Nanotechnology (Cover)***, 8, 247. Highlighted by **Science** Editors' Choice

2. Mubeen S., Lee J., Singh N., Stucky G.D., Moskovits M., & McFarland E.W., "Synthesis of Chemicals Using Solar Energy with Stable Photoelectrochemically Active Heterostructures", ***Nano Letters,*** 15, 2110.

3. Mubeen S., Lee J., Singh N., Moskovits M., & McFarland E.W., "Stabilizing Inorganic Photoelectrodes for Efficient Solar-to-Chemical Energy Conversion", ***Energy & Environmental Science***, 6, 1633

4. Mubeen S., Lai M., Zhang T., Lim J. H., Mulchandani A., Deshusses M.A., & Myung N.V. "Hybrid Tin oxide-SWNT nanostructures based gas sensor", ***Electrochimica Acta,*** 92, 484.

2012

1. Mubeen S., Lee J., Ji X., Stucky G.D., & Moskovits M, "Plasmonic Photoanodes for Solar Water Splitting with Visible Light", ***Nano letters***, *12*, 5014.

2. Mubeen S., Zhang S., Kim N.H., Xu H., & Moskovits M. "Plasmonic Properties of Gold Nanoparticles Separated by an Ultrathin Oxide from a Gold Mirror", ***Nano Letters****, 12*, 2088.

3. Lee J., Mubeen S., Sosa G.H., Sun Y., Toma F.M., Stucky G.D., & Moskovits M. "High-Efficiency Panchromatic Hybrid Schottky Solar Cells", ***Advanced Materials***, DOI: 10.1002/adma.201202451.

4. Zhang Y., Snedaker M., Birkel C., Mubeen S., Ji D., Shi Y.F., Liu D., Moskovits M., & Stucky G. "Silver based Inter Metallic Hetero Structures in Sb2Te3 Thick Films with Enhanced Thermoelectric Power Factors", ***Nano Letters****, 12*, 1075.

5. Hernandez S.C., Kakoullis J., Lim J.H., Mubeen S., Hangarter C.M., Mulchandani A., & Myung N.V., "Hybrid ZnO/SWNT Nanostructures Based Gas Sensor", **Electroanalysis**, 24, 1613.

2011

1. Mubeen S., Sosa G.H., Moses D., Lee J., & Moskovits M. "Plasmonic Photosensitization of a Wide Band Gap Semiconductor: Converting Plasmons to Charge Carriers", ***Nano Letters,*** 11, 5548.

2. Mubeen S., & Moskovits M. "Gate Tunable Surface Processes on a Single Nanowire Field Effect Transistor", **Advanced *Materials***, 23, 2306.

3. Mubeen S., Lim J.H., Srirangarajan A., Mulchandani A., Deshusses M.A., & Myung N.V. "Gas Sensing Mechanism of Gold Nanoparticles Decorated Single-Walled Carbon Nanotubes", ***Electroanalysis***, 23, 2687.

4. Lee J., Mubeen S., Hangarter C.M., Mulchandani A., Chen W., & Myung N.V. " Selective and Rapid Room Temperature Detection of H2S using Gold Nanoparticle Chain Arrays", ***Electroanalysis***, 23, 2623.

2010

1. Mubeen S., Zhang T., Charutraprayoon N., Mulchandani A., Myung N.V. & Deshusses M.A. "Sensitive Detection of H2S Based on Gold Nanoparticles Decorated Single-Walled Carbon Nanotubes", ***Analytical Chemistry,*** 82, 250.

2. Lai M., Mubeen S., Charutraprayoon N., Mulchandani A., Deshusses M.A. & Myung N.V. "Synthesis of Sn Doped CuO Nanotubes from Core Shell Cu/SnO2 Nanowires by Kirkendall Effect", ***Nanotechnology,*** 21, 295601.

3. Lim J.H., Phiboolsirichit N., Mubeen S., Rheem Y., Mulchandani A., Deshusses M.A. & Myung N.V. "Electrical and Sensing Properties of Single-Walled Carbon Nanotubes Network: Effect of Alignment and Selective Breakdown", ***Electroanalysis,*** 22, 99.

4. Lim J.H., Phiboolsirichit N., Mubeen S., Rheem Y., Mulchandani A., Deshusses M.A. & Myung N.V. "Electrical and Gas Sensing Properties of Polyaniline Functionalized Single-Walled Carbon Nanotubes", ***Nanotechnology,*** 21, 075502.

2009

1. Zhang T., Mubeen S., Yoo B.Y., Myung N.V. & Deshusses M.A. "A Gas Nanosensor Unaffected by Humidity", ***Nanotechnology,*** 20, 255501.

2. Lai M., Lim J.H., Mubeen S., Rheem Y., Mulchandani A., Deshusses M.A. & Myung N.V. "Size-controlled Electrochemical Synthesis and Properties of SnO2 Nanotubes", ***Nanotechnology,*** 20, 18.

2008

1. Mubeen S., Yoo B.Y., & Myung N.V. "Fabrication of Nano-Electrodes and Nanojunction Hydrogen Sensor", ***Applied Physics Letters,*** 93, 133111.

2. Zhang T., Mubeen S., Myung N.V. & Deshusses M.A. "Recent Progress in Carbon Nanotube based Gas Sensors", ***Nanotechnology,*** 19, 33.

2007

1. Mubeen S., Zhang T., Yoo B.Y., Deshusses M.A., & Myung N.V. "Palladium Nanoparticles Decorated Single-Walled Carbon Nanotubes Based Hydrogen Sensor", ***Journal of Physical Chemistry C,*** 111, 6321.

2. Zhang T., Mubeen S., Bekyarova E., Yoo B.Y., Haddon R.C., Myung N.V. & Deshusses M.A. "Poly (m-Aminobenzene Sulfonic Acid) Functionalized Single-Walled Carbon Nanotubes Based Gas Sensor", ***Nanotechnology,*** 18, 165504.

2005

1. Babu B.V., Chakole P.G., & Mubeen S. "Multi-Objective Differential Evolution (MODE) for Optimization of Adiabatic Styrene Reactor", ***Chemical Engineering Science,*** 60, 4822.

2. Babu B.V., Mubeen S., & Chakole P.G. "Multi-Objective Optimization Using Differential Evolution", ***TechGenesis-The Journal of Information Technology***, 2, 4.

Patents and Disclosures:

1. Metal and Metal Oxide Co-Functionalized Single-Walled Carbon Nanotubes for High Performance Gas Sensors at *University of California*, Riverside, CA, US Patent Publication No. 2012/0080319.
2. Development of Novel Materials and Architectures for Low Cost Electrochemical Energy Storage Systems at *University of California*, Santa Barbara, CA. U.S. Provisional Application No. 61/833,194.
3. Organic-Inorganic Composite Electrodes for Electrical Energy Storage (2013) at *University of California*, Santa Barbara, CA.
4. Protection and Stability of Electroactive Units Used for Production of Fuels and Chemicals (2012) at *University of California*, Santa Barbara, CA.
5. Photoelectrosynthetically Active Heterostructures (2012) at *University of California*, Santa Barbara, CA.
6. Process for Manufacturing Bit Pattern Media at *Seagate* Tech*nology*, Pittsburgh, PA (2008).
7. Optimizing Bath Composition for Electrochemical Assisted Deposition of Titania at *Seagate Technology*, Pittsburgh, PA (2008).

Honors and Awards:

- Technological Achievement Award (2009) in recognition for contribution in Bit Pattern Media Fabrication. Seagate Technology, Pittsburgh.
- Best Graduate Student Presentation Award (2007), 7th Annual Graduate Symposium, UC, Riverside.
- Best outgoing graduate student award (2004), BITS, Pilani, India.