

Amir Mazaheripour

2100 Red Rose Way, #R
Santa Barbara, CA 92617

Phone (646) 544-6235
E-mail: amazaher@uci.edu
www.linkedin.com/in/amirmaz

EDUCATION

University of California, Irvine

PhD in Materials Science and Engineering, GPA 3.95

December 2016

MS in Materials Science and Engineering, GPA 3.90

Spring 2014

Columbia University, School of Engineering and Applied Science

BS in Materials Science Engineering, GPA 3.55

May 2011

- Double minor in Engineering Mechanics, Philosophy

TECHNICAL SKILLS

- **Organic Synthesis and Purification:** Organic small molecule synthesis, polymer synthesis, air-sensitive or glovebox synthesis, flash chromatography, HPLC, and GPC/SEC purification, mass spectrometry
- **General Spectroscopic and Electrical Characterization Techniques:** NMR spectroscopy, UV-visible absorbance spectroscopy, fluorescence spectroscopy, electrochemistry, cyclic voltammetry
- **Synchrotron-based and/or Surface-Sensitive Characterization Techniques:** X-ray photoemission spectroscopy (XPS), X-ray absorption fine-structure spectroscopy (NEXAFS), resonant photoemission/core-hole clock spectroscopies (RPES), X-ray diffraction (XRD), pair distribution function (PDF) nanostructure analysis technique
- **Clean-room Techniques:** Microfabrication, photolithography, thermal evaporation, general clean room processing (mask alignment, plasma/chemical etching, spincoating, etc)
- **Computer Software:** IGOR technical graphing and analysis, coding in Python and Java, Adobe Illustrator

RESEARCH EXPERIENCE

UCSB, Postdoctoral Research Scientist: Organic Electronics

February 2017-Present

Principal Investigator: Professor Michael Chabinyc

- Design, synthesize, and characterize novel organic electronic materials for flexible bioelectronic and thermoelectric devices.

UCI, PhD Research: Organic Electronics

September 2011-Present

Principal Investigator: Professor Alon Gorodetsky

- Founding member of laboratory alongside incoming professor and 2 other graduate students, as well as on-site safety manager for 2 years
- Led project on bioinspired lossless molecular wires with length and sequence control: synthesis, self-assembly into device configurations, and electronic characterization via synchrotron-based and electrochemical techniques
- Synthesized and characterize electronic structure of nitrogen doped graphene nanoribbons with in-situ synchrotron spectroscopy
- Wrote several successful proposals for acquiring beam time at Elettra Sincotrone in Trieste, Italy
- Assisted PI in writing ONR (N000141210491, N000141310650, and N000141512680) and AFOSR (FA9550-13-1-0096) grant proposals to fund research

Elettra Synchrotron Light Laboratory, ALOISA Beamline: Visiting Research Scientist

Summer 2015

Advisor: Professor Alberto Morgante

- Operated surface science beamline instrument to take various types of X-ray spectroscopic measurements on organic-electrode interfaces
- Processed and interpreted XPS and NEXAFS data to map electronic structure and molecular geometry at interface
- Analyzed RPES data using core-hole clock (CHC) method to extract charge-transfer times at interface

Columbia University, Materials Science Research: Platinum Nanoparticles

Summer 2010-2012

Advisor: Professor Simon Billinge

- Processed X-ray diffraction data from Brookhaven National Labs using pair distribution function (PDF) technique to analyze structure of ultra-small platinum nanoparticles used in hydrogen fuel cells
- Refined parameters on simulated platinum lattice unit cell to match processed PDF data and obtained concrete model of nanostructure detailing local and long-range order
- Published paper on non-bulk properties in platinum nanoparticles and the implications to applications in fuel-cell catalysis

Columbia University, Astrophysics Research: Cosmic Microwave Background

Summer 2008-2010

Advisor: Professor Amber Miller

- Manipulated and elaborated on modeling code, written in MATLAB, to further understand the impact of different microstructural arrangements on the performance of frequency selective surfaces

- Simulated bandpass and lowpass transmission curves for microwave frequency-selective surfaces of various geometries
- Fabricated low-pass and band-pass filters for specified frequency ranges using photolithography and other clean room techniques
- Tested behavior and quality of microwave frequency filters using spectrometer and LabVIEW Interface
- Collaborated with 5 person research group to discuss current issues with filter transmission, and propose solutions to improve future filter development techniques

Columbia University, Gateway Lab Student Design Team

Fall 2008

“Office of Disabilities Services Slant Desk”

- Collaborated with 4 person lab group and used MAYA modeling software to design a portable slant desk, crafting it to the specific needs of a disabled student
- Communicated with client weekly to discuss current state of design, elaborating on specifications of desk, changing student needs and desires for desk, and met with group to update design based on this discussion
- Formalized fabrication dimensions *via* AUTOCAD modeling software

PATENTS

“Quinolines, Polyquinolines, Molecular Segments of Fullerenes and Graphene Nanoribbons, and Graphene Nanoribbons and Methods of their Synthesis.” International Patent Application, Number PCT/US2015/0688339, December 31, 2015.

“Perylene Phosphoramidites for Automated Synthetic Manipulations and their Applications” U. S. Patent Application, Number 62/396,020, September 16, 2016.

PUBLICATIONS

Mazaheripour, A.; Dibble, D. J.; Feng, Z.; Kladnik, G.; Bartlett, A.; Wardrip, A. G.; Lopez, R.; Kurakake, R.; Cossaro, A.; Floreano, L.; Verdini, A.; Cvetko, D.; Comelli, G.; Morgante, A.; Gorodetsky, A. A. Self-Aligned Ultra Narrow Nitrogen Doped Graphene Nanoribbons. *In Preparation*.

Mazaheripour, A.; Kladnik, G.; Jocson, J.-M.; Wardrip, A.; Frey, N.; Cossaro, A.; Floreano, L.; Verdini, A.; Bartlett, A.; Sharifzadeh, S.; Cvetko, D.; Morgante, A.; Gorodetsky, A. A. The Role of Alkanethiol Post-Treatment in Charge Transfer Across Self-Assembled Perylenediimide Monolayers. *In Preparation*.

Mazaheripour, A.; Markegard, C. B.; Jocson, J.-M.; Bartlett, A.; Frey, N.; Burke, A. M.; Sharifzadeh, S.; Gorodetsky, A. A.; Nguyen, H. (2016). Molecular Dynamics Simulations of Stacked Perylenediimide Molecular Wires. *In Preparation*.

Mazaheripour, A.; Kladnik, G.; Jocson, J.-M.; Wardrip, A.; Markegard, C. B.; Frey, N.; Cossaro, A.; Floreano, L.; Verdini, A.; Bartlett, A.; Burke, A. M.; N.; Hüsken, Miller, K.; Van Wouterghem, K.; Lopez, R.; Lu, M.; Marsukar, A.; Dickson, M. N.; Sharifzadeh, S.; Nguyen, H.; Kymissis, I.; Cvetko, D.; Morgante, A.; Gorodetsky, A. A. (2016). Unexpected Length Dependence of Excited-State Charge Transfer Dynamics for Surface-Confined Perylenediimide Ensembles. *Materials Horizons*, Advance Article.

Wardrip, A.; **Mazaheripour, A.;** Hüsken, N.; Jocson, J.-M.; Bartlett, A.; Burke, A. M.; Dickson, M. N.; Gorodetsky, A. A. (2016). Length-Independent Charge Transport in Chimeric Molecular Wires. (2016) *Angewandte Chemie International Edition*, 55, 14267-14271.

Umerani, M. J.; Dibble, D.J.; Wardrip, A. W.; **Mazaheripour, A.;** Vargas, E.; Ziller, J. W.; Gorodetsky, A.A. (2016). Synthesis of Polyquinolines *via* an AA/BB-type aza-Diels-Alder Polymerization Reaction. *J. Mater. Chem. C*, 4, 4060-4066.

- Part of the *Emerging Investigators 2016* special issue.

Mazaheripour, A.; Dibble, D. J.; Umerani, M. J.; Park, Y. S.; Lopez, R.; Laidlaw, D.; Vargas, E.; Ziller, J. W.; Gorodetsky, A. A. (2015). An Aza-Diels–Alder Approach to Crowded Benzoquinolines. *Organic Letters*, 18, 156-159.

Markegard, C. B.; **Mazaheripour, A.;** Jocson, J.-M.; Burke, A. M.; Dickson, M. N.; Gorodetsky, A. A.; Nguyen, H. (2015). Molecular Dynamics Simulations of Perylenediimide DNA Base Surrogates. *Journal of Physical Chemistry B*, 119, 11459-11465.

Dibble, D. J.; Park, Y. S.; **Mazaheripour, A.;** Umerani, M. J.; Ziller, J. W.; Gorodetsky, A. A. (2015). Synthesis of Polybenzoquinolines as Precursors for Nitrogen-Doped Graphene Nanoribbons. *Angewandte Chemie International Edition*, 54, 5883-5887.

- Highlighted in *Synfacts* (see Swager, et. al. *Synfacts* 2015, 11, 0604).

Dibble, D. J.; Umerani, M. J.; **Mazaheripour, A.;** Park, Y. S.; Ziller, J. W.; Gorodetsky, A. A. (2015) An Aza-Diels–Alder Route to Polyquinolines. *Macromolecules*, 48, 557-561.

Wohlgamuth, C. H.; McWilliams, M. A.; **Mazaheripour, A.**; Burke, A. M.; Lin, K.-Y.; Doan, L.; Slinker, J. D.; Gorodetsky, A. A. (2014). Electrochemistry of DNA Monolayers Modified With a Perylenediimide Base Surrogate. *Journal of Physical Chemistry C*, 118, 29084-29090.

Shi, C.; Redmond, E. L.; **Mazaheripour, A.**; Juhas, P.; Fuller, T. F.; Billinge, S. J. L. (2013). Evidence for Anomalous Bond Softening and Disorder Below 2 nm Diameter in Carbon-Supported Platinum Nanoparticles from the Temperature-Dependent Peak Width of the Atomic Pair Distribution Function. *Journal of Physical Chemistry C*, 117, 7226-7230.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- Presented a total of 20+ oral presentations at several peer-reviewed international conferences, including MRS Phoenix, MRS San Francisco, MRS Boston, ACS Denver, ACS San Diego, Pacificchem, and FPI-12.
- Presented an invited talk on behalf of PI at Pacificchem conference (Synthesis and Characterization of DNA-Inspired Organic Nanowires)

TEACHING EXPERIENCE

UCI, Teaching Assistant

September 2014-December 2014

“Chemistry for Engineers”

September 2015-December 2015

- Serve as teaching assistant for a course of more than 250 students
- Led discussion sections to help students understand chemistry fundamentals while emphasizing engineering applications
- Lectured entire class in place of professor when needed

UCI, Teaching Assistant

March 2014-June 2014

“Diffusion and Phase Transformations”

March 2015-June 2015

- Led problem solving sections to help students understand diffusion fundamentals while emphasizing engineering applications
- Lectured entire class in place of professor when needed

Columbia University, Private Physics Tutor

Fall 2008-2010

- Tutor high-school physics students twice a week, developing their analytical thinking and systematically increasing their average scores on assignments and exams

AWARDS AND HONORS

Keck Institute of Space Studies, Mars In-Situ Resource Utilization Workshop Nominee, Caltech

Fpi-12 Poster Presentation Competition, First Place, Royal Society of Chemistry

Henry Samueli School of Engineering Graduate Fellowship

Summer Research Fellow (REU), Energy Frontier Research Center, Columbia University

Dean’s List, Columbia University

MEMBERSHIP AND AFFILIATIONS

Ambassador to the Faculty, Materials Science

Fall 2014-2016

ChEMS Graduate Students Association at UCI

Materials Research Society

Fall 2011-Present

American Chemical Society

Fall 2012-Present