

Maxx Q. Arguilla

E-mail: marguill@uci.edu

RESEARCH INTERESTS

Chemistry of Low-Dimensional Solids—Solid state chemistry/nanochemistry interface, van der Waals materials, topological phases, optoelectronics, magnetism, sensing

PROFESSIONAL APPOINTMENTS AND EDUCATION

2020-Present University of California, Irvine

Department of Chemistry
Assistant Professor

2017-2020 Massachusetts Institute of Technology

Department of Chemistry
Postdoctoral Fellow (October 2019 – June 2020)
Postdoctoral Associate (September 2017 – September 2019)

Advisor: Prof. Mircea Dincă

Research Projects: Electronic, Optical and Magnetic Confinement Effects in One-Dimensional van der Waals Crystals; Structure and Optical Properties of Electronically-Active Metal Organic Frameworks

2012-2017 The Ohio State University

Ph. D. Inorganic Chemistry

Advisor: Prof. Joshua E. Goldberger

Thesis title: Electronic and Magnetic Materials from Two-dimensional Honeycomb Tin Lattices

2011-2012 University of the Philippines-Diliman

Institute of Chemistry
Instructor 3, Junior Faculty Member

2007-2011 University of the Philippines-Diliman

B.S. Chemistry, *Cum Laude*
Advisor: Prof. Leon Payawan

PUBLICATIONS

- [13] R. W. Day, K. Bediako, M. Rezaee, L. Parent, G. Skorupskii, **M. Q. Arguilla**, C. Hendon, I. Stassen, N. Gianneschi, P. Kim, and M. Dincă, “Single crystals of electrically conductive 2D MOFs: structural and electrical transport properties”, *ACS Central Science*, 5, 1959-1964 (2019).
- [12] B. He,* Y. Wang,* **M. Q. Arguilla**, N. D. Cultrara, M. R. Scudder, J. E. Goldberger, W. Windl, J. P. Heremans, “The Fermi Surface Geometrical Origin of Axis-Dependent Conduction Polarity in Layered Materials” *Nature Materials*, 18, 568-572 (2019). *denotes equal contribution
- o *Featured in several news outlets:*
 - “Polarity is a Matter of Perspective” *Nature Materials News and Views*; **Nature Materials**, 18, 532-533 (2019)

- “Researchers Discover New Material to Help Power Electronics” **Eurekalert** (AAAS)
- “Novel dual-personality material can hold both electrons and holes” **Materials Today** (Elsevier)

- [11] N.D. Cultrara, Y. Wang, **M. Q. Arquilla**, M. R. Scudder, S. Jiang, W. Windl, S. Bobev, J. E. Goldberger, “Synthesis of 1T, 2H and 6R Germanane Polytypes” *Chemistry of Materials*, 30, 1335-1343 (2018).
- [10] N. D. Cultrara, **M. Q. Arquilla**, S. Jiang, C. Sun, M. R. Scudder, R. D. Ross, J. E. Goldberger, “Group-13 and Group-15 Doping of Germanane” *Beilstein Journal of Nanotechnology*, 8, 1642-1648 (2017).
- [9] **M. Q. Arquilla**, N. D. Cultrara, M. R. Scudder, S. Jiang, R. D. Ross, J. E. Goldberger, “Optical Properties and Raman-Active Phonon Modes in Two-Dimensional Honeycomb Zintl Phases” *Journal of Materials Chemistry C*, 5, 11259-11266 (2017).
- [8] **M. Q. Arquilla**, N. D. Cultrara, J. J. Baum, S. Jiang, R. D. Ross, J. E. Goldberger, “EuSn₂As₂: An Exfoliatable Magnetic Layered Zintl Phase” *Inorganic Chemistry Frontiers*, 4, 378-386 (2017). *Special issue in honor of Prof. Mercuri Kanatzidis
- [7] L. Trinidad, **M. Q. Arquilla**, K. A. S. Usman, L. M. Payawan, ““Ship-in-a-Bottle” Synthesis of Fluorescent Iridium (III) Complex Ion unto Zeolite Y Supercages” *Key Engineering Materials*, 707, 135-138 (2016).
- [6] S. Jiang, K. Krymowski, T. Asel, **M.Q. Arquilla**, N. D. Cultrara, E. Yanchenko, X. Yang, L. Brillson, W. Windl, J. E. Goldberger, “Tailoring the Electronic Structure of Covalently Functionalized Germanane via the Interplay of Ligand Strain and Electronegativity” *Chemistry of Materials*, 28, 8071-8077 (2016).
- [5] **M. Q. Arquilla**,* J. Katoch,* K. Krymowski, N. Cultrara, J. Xu, X. Xi, A. Hanks, S. Jiang, R.D. Ross, R.J. Koch, S. Ulstrup, A. Bostwick, C. Jozwiak, E. Rotenberg, D. McComb, J. Shan, W. Windl, R. K. Kawakami and J.E. Goldberger, “NaSn₂As₂: An Exfoliatable Layered van der Waals Zintl Phase” *ACS Nano*, 10, 9500-9508 (2016). *denotes equal contribution
- [4] S. Jiang, **M. Q. Arquilla**, N. D. Cultrara, J. Goldberger, “Improved Topotactic Reactions for Maximizing Organic Coverage of Methyl Germanane” *Chemistry of Materials*, 28, 4735-4740 (2016).
- [3] J. R Young,* B. Chitara,* N. D. Cultrara, **M. Q. Arquilla**, S. Jiang, F. Fan, E. Johnston-Halperin, J. E Goldberger, “Water Activated Doping and Transport in Multilayered Germanane Crystals.” *Journal of Physics: Condensed Matter*, 3, 034001 (2016). *denotes equal contribution
- [2] S. Jiang,* **M. Q. Arquilla**,* N. Cultrara,* J. E. Goldberger, “Covalently-Controlled Properties by Design in Group IV Graphane Analogues.” *Accounts of Chemical Research*, 48, 144-151, (2015). *denotes equal contribution
- [1] **M. Q. Arquilla**, S. Jiang, B. Chitara, J. E. Goldberger, “Synthesis and Stability of Two-dimensional Ge/Sn Graphane Alloys.” *Chemistry of Materials*, 26, 6941-6946, (2014).

TEACHING

- **As a graduate teaching assistant**, The Ohio State University. August 2012 – May 2014 (4 sem.).
 - **Laboratory Courses Taught:**
 - Chem 1210: General Chemistry I Lab
 - Chem 1220: General Chemistry II Lab
- **As an instructor 3**, University of the Philippines-*Diliman*. June 2011 – May 2012 (2 sem. and 1 summer term).
 - **Laboratory Courses Taught:**
 - Chem 16 Lab: General Chemistry I
 - Chem 17 Lab: General Chemistry II
 - Chem 31.1: Organic Chemistry I Lab
 - Chem 125.1: Chemical Instrumentation for Chemistry Majors

PRESENTATIONS, WORKSHOPS AND MEETINGS

- **Invited Oral Presentations**
 - Department of Chemistry, University of California—Irvine. February 2020.
 - Department of Chemistry, Syracuse University. February 2020.
 - Department of Chemistry, Carnegie Mellon University. January 2020.
 - MIT Chemistry Student Seminar Series. January 2020.
 - Department of Chemistry, University of Delaware. December 2019.
 - Physics of Emergent Materials Workshop, The Ohio State University. May 2017.
 - ACS Columbus Chapter Meeting. April 2017.
- **Oral Presentations**
 - 47th ACS Central Regional Meeting, Northern Kentucky Convention Center. May 2016.
 - Ohio Inorganic Weekend, Bowling Green State University. November 2015.
 - 57th Electronic Materials Conference (MRS), The Ohio State University. June 2015.
 - 26th Philippine Chemistry Congress, Lahug, Cebu City. April 2011.
- **Poster Presentations**
 - Meet Your New Faculty Candidate, Materials Research Society Fall Meeting. December 2019.
 - North American Solid State Chemistry Conference, Colorado School of Mines. July 2019.
 - Workshop on Spins, Valleys, and Topological States in 2D and Layered Materials, The Ohio State University. June 2017.
 - IMR Materials Week, The Ohio State University. May 2017.
 - ACS Columbus Section Poster Competition, The Ohio State University. March 2016.
 - Gordon Research Conference (Solid State Chemistry), Colby Sawyer College. July 2016.
 - Gordon Research Seminar (Solid State Chemistry), Colby Sawyer College. July 2016.
 - IMR Materials Week, The Ohio State University. May 2016.
 - North American Solid State Conference, Florida State University. May 2015.
 - IMR Materials Week, The Ohio State University. May 2015.
 - Ohio Inorganic Weekend, University of Michigan. November 2014.
 - IMR Materials Week, The Ohio State University. May 2014.
 - 2DLM Graphene and Beyond Workshop, Pennsylvania State University. April 2014.
 - Ohio Inorganic Weekend, University of Dayton. November 2014.
 - 31st Philippine-American Academy of Science and Engineering—Annual Meeting and Symposium, Quezon City, June 2011.

EXTERNAL SERVICE

- **Peer Review**

- **Has served as an independent peer reviewer in the following journals:** Nano Letters (ACS); Chemical Society Reviews (RSC); Materials Chemistry and Physics (Elsevier)
- **Mentor**, Women in Chemistry & Chemistry Alliance for Diversity and Inclusion Poster Symposium, Massachusetts Institute of Technology. October 2019.
- **Postdoctoral Representative**, Quality of Life Committee, Department of Chemistry, Massachusetts Institute of Technology. March 2018 – *Present*.
 - Member, Mentoring Subgroup, February 2019 – *Present*.
- **Mentor**, Scientific Thinkers—a Center for Emergent Materials, NSF-MRSEC, STEM outreach program for elementary students (<https://u.osu.edu/cemscientificthinkers>), The Ohio State University. May 2014 – August 2017.

AWARDS AND HONORS

- Best Student Poster, ACS Columbus Section Competition, Columbus, OH. April 2017.
- Best Student Poster, Dow Graduate Student Competition, Columbus, OH. October 2016.
- Best Student Poster, IMR Materials Week, Columbus, OH. May 2016.
- Best Student Poster, IMR Materials Week, Columbus, OH. May 2014.
- Inducted to the honor society of Phi Kappa Phi Chapter 045, Philippines, April 2010.

MEMBERSHIPS

- Member, Materials Research Society. November 2019 – *Present*.
- Member, National Postdoctoral Association. September 2017 – *Present*.
- Member, American Chemical Society (DIC). October 2016 – *Present*.
- Member, Integrated Chemists of the Philippines. September 2011 – *Present*.
- Licensed Chemist, Professional Regulation Commission, Philippines. September 2011.
- Member, International Honor Society of Phi Kappa Phi Chapter 045, Philippines. April 2010.
- Member, Association of Chemistry Members and Enthusiasts, University of the Philippines-Diliman. 2008 – 2011.