

# Qing Hua Wang

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## EDUCATION

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**Ph.D. in Materials Science and Engineering** 2010  
**Northwestern University**, Evanston, IL, USA  
Department of Materials Science and Engineering (Advisor: Prof. Mark Hersam)  
Thesis: "Investigating the Assembly of Hybrid Organic and Inorganic Nanostructures on Silicon and Graphene with Scanning Tunneling Microscopy"

**B.A.Sc. with Honours in Engineering Science** 2005  
**University of Toronto**, Toronto, ON, Canada  
Department of Electrical & Computer Engineering (Advisor: Prof. Parham Aarabi)  
Department of Physics (Advisor: Prof. Henry van Driel)  
Thesis: "Detection of Optically Induced Magnetization by Terahertz Spectroscopy"

## PROFESSIONAL EXPERIENCE

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**Assistant Professor of Materials Science and Engineering** 2014 – Present  
School for Engineering of Matter, Transport and Energy  
Arizona State University, Tempe, AZ, USA

**Postdoctoral Research Associate** 2010 – 2014  
Department of Chemical Engineering (Advisor: Prof. Michael Strano)  
Massachusetts Institute of Technology (MIT), Cambridge, MA, USA

## PUBLICATIONS

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### JOURNAL ARTICLES

Google Scholar: <https://scholar.google.com/citations?hl=en&user=o0w135AAAAAJ>

H-index = 26, total citations >13,000

(\*) Corresponding author

Underline Italic Font: ASU PhD student for whom Dr. Wang is the primary advisor

Underline Font: ASU PhD student for whom Dr. Wang is a co-advisor or has significant mentoring responsibility

(‡) Equal Contributions

(†) invited article

1. A. Debnath, S. Saha, D. O. Li, X. S. Chu, Z. W. Ulissi, **Q. H. Wang**, and A. A. Green\*. "Elimination of Multidrug Resistant Bacteria by Transition Metal Dichalcogenides Encapsulated by Synthetic Single-Stranded DNA", in preparation
2. M. Matar Abed, S. Saha, M. S. Gilliam, A. A. Green\*, **Q. H. Wang**\*. "Artificial Enzymes from Hafnium Diboride Nanosheets Dispersed in Biocompatible Block Copolymers", in preparation
3. D. O. Li, S. Sulzman, J. Baab, **Q. H. Wang**\*, and C. K. Chan\*. "Ion Imprinted Electrocoagulation for Selective Removal of Selenium", in preparation
4. M. S. Gilliam, A. Yousaf, D. O. Li, **Q. H. Wang**, and A. A. Green\*, "Dispersion Efficiency of Metal Diboride Nanosheets in Organic Solvents Characterized by Solubility Parameters", in preparation

5. S. Saha, A. Debnath, **Q. H. Wang**, and A. A. Green\*, “Destruction of Bacterial Biofilms Using Ultrathin Molybdenum Diselenide Layer on Various Surgical Coatings”, in preparation
6. A. Debnath, S. Saha, **Q. H. Wang**, and A. A. Green\*, “Eradication of Multidrug-Resistant Bacteria Using Poly-L-Lysine-Encapsulated 2D MoSe<sub>2</sub> Nanosheets”, in preparation
7. A. Yousaf†, M. S. Gilliam†, S. L. Y. Chang, M. Augustin, Y. Guo, F. Tahir, M. Wang, A. Schwindt, X. S. Chu, D. O. Li, S. Kale, A. Debnath, Y. Liu, M. D. Green, E. J. G. Santos\*, A. A. Green\*, **Q. H. Wang**\*. “Exfoliation of Two-Dimensional Nanosheets of Metal Diborides”, in review, <https://arxiv.org/abs/2001.09237>
8. D. O. Li, M. S. Gilliam, A. Debnath, X. S. Chu, A. Yousaf, A. A. Green, and **Q. H. Wang**\*. “Interaction of Pb<sup>2+</sup> ions in water with two-dimensional molybdenum disulfide”, *Journal of Physics: Materials*, accepted (2020).
9. D. O. Li, M. S. Gilliam, X. S. Chu, A. Yousaf, Y. Guo, A. A. Green, **Q. H. Wang**\*. “Covalent chemical functionalization of semiconducting layered chalcogenide nanosheets”, *Molecular Systems Design & Engineering*, **4** (4), 962-973 (2019).
10. P. C. Theofanopoulos, S. Ageno, Y. Guo, S. Kale, **Q. H. Wang**, G. C. Trichopoulos\*. “High-yield fabrication method for high-frequency graphene devices using titanium sacrificial layers”, *Journal of Vacuum Science & Technology B*, **37** (4), 041801 (2019).
11. D. O. Li, X. S. Chu, and **Q. H. Wang**\*. “Reaction kinetics for the covalent functionalization of two-dimensional MoS<sub>2</sub> by aryl diazonium salts”, *Langmuir*, **35** (17), 5693-5701 (2019).
12. H. Jing, Q. Cheng, J. M. Weller, X. S. Chu, **Q. H. Wang** & C. K. Chan\*. “Synthesis of TiO<sub>2</sub> nanosheet photocatalysts from exfoliation of TiS<sub>2</sub> and hydrothermal treatment”, *Journal of Materials Research*, **33** (21), 3540-3548 (2018).
13. X. S. Chu, A. Yousaf, D. O. Li, A. A. Tang, A. Debnath, D. Ma, A. A. Green\*, E.J.G. Santos, and **Q. H. Wang**\*. “Direct Covalent Chemical Functionalization of Unmodified Two-Dimensional Molybdenum Disulfide”, *Chemistry of Materials*, **30** (6), 2112-2128 (2018).
14. D. O. Bellisario, A. T. Liu, D. Kozawa, R. Han, J. K. Harris, R. B. Zabala, **Q. H. Wang**, K. V. Agrawal, Y. Son, M. S. Strano. “Experimental Observation of Real Time Molecular Dynamics Using Electromigrated Tunnel Junctions”, *Journal of Physical Chemistry C*, **121** (40), 22550-22558 (2017).
15. X. S. Chu, D. O. Li, A. A. Green and Q. H. Wang. “Formation of MoO<sub>3</sub> and WO<sub>3</sub> Nanoscrolls from MoS<sub>2</sub> and WS<sub>2</sub> by Atmospheric Air Plasma”, *Journal of Materials Chemistry C*, **5**, 11301-11309 (2017).
16. E. J. G. Santos, D. Scullion, X. S. Chu, D. O. Li, N. P. Guisinger, and **Q. H. Wang**\*. “Rotational Superstructure in Self-Assembled C<sub>60</sub> Monolayer on the WSe<sub>2</sub> Surface”, *Nanoscale*, **9** (35), 13245-13256 (2017).
17. Y. Son, D. Kozawa, A. T. Liu, V. B. Koman, **Q. H. Wang**, and M. S. Strano. “A study of bilayer phosphorene stability under MoS<sub>2</sub>-passivation”, *2D Materials*, **4**, 025091 (2017).
18. K. V. Agrawal, J. D. Benck, Z. Yuan, R. P. Misra, A. G. Rajan, Y. Eatmon, S. Kale, X. S. Chu, D. O. Li, C. Gong, J. H. Warner, **Q. H. Wang**, D. Blankschtein, and M. S. Strano\*. “Fabrication, Pressure Testing and Nanopore Formation of Single Layer Graphene Membranes”, *Journal of Physical Chemistry C*, **121** (26), 14312–14321 (2017).
19. † A. Kaplan, Z. Yuan, J. D. Benck, A. G. Rajan, X. S. Chu, **Q. H. Wang**\*, and **M. S. Strano**\*. “Current and future directions in electron transfer chemistry of graphene”, *Chemical Society Reviews*, **46**, 4530-4571 (2017).
20. Y. Son, M.Y. Li, C.C. Cheng, K.H. Wei, P. Liu, **Q.H. Wang**, L.J. Li, M.S. Strano\*. Observation of Switchable Photoresponse of a Monolayer WSe<sub>2</sub>-MoS<sub>2</sub> Lateral Heterostructure via Photocurrent Spectral Atomic Force Microscopic Imaging. *Nano Letters*, **16** (6), 3571-3577 (2016).

21. J. H. Appel, D. O. Li, J. D. Podlevsky, A. Debnath, A. A. Green, **Q. H. Wang**, & J. Chae\*. Low Cytotoxicity and Genotoxicity of Two-Dimensional MoS<sub>2</sub> and WS<sub>2</sub>. **ACS Biomaterials Science & Engineering**, **2**, (3), 361-367 (2016).
22. Y. Son†, **Q. H. Wang**‡, J. A. Paulson, C.-J. Shih, A. G. Rajan, K. Tvrdy, S. Kim, B. Alfeeli, R. D. Braatz and M. S. Strano\*. "Layer number dependence of MoS<sub>2</sub> photoconductivity using photocurrent spectral atomic force microscopic imaging," **ACS Nano**, **9**, 2843-2855 (2015).
23. G. L. C. Paulus, J. T. Nelson, K. Y. Lee, N. F. Reuel, J. Zhang, **Q. H. Wang**, B. R. Grassbaugh, B. Mu, C. Opel, D. Wittrup, and M. S. Strano\*. "A graphene-based physiometer array for the analysis of single biological cells", **Scientific Reports**, **4**, 6865 (2014).
24. S. G. Mahajan, J. T. Abrahamson, S. Birkhimer, E. Friedman, **Q. H. Wang**, M. Beck and M. S. Strano\*. "Superadiabaticity in Reaction Waves as a Mechanism for Energy Concentration", **Energy & Environmental Science**, **7**, 3391-3402 (2014).
25. C.-J. Shih, **Q. H. Wang**, Y. Son, Z. Jin, D. Blankschtein, and M. S. Strano\*. "Tuning On-Off Current Ratio and Field Effect Mobility in MoS<sub>2</sub>-Graphene Heterostructure via Schottky Barrier Modulation," **ACS Nano**, **8**, 5790-5798 (2014).
26. A. J. Hilmer, D. O. Bellisario, S. Shimizu, T. P. McNicholas, **Q. H. Wang**, S. A. Speakman, and M. S. Strano\*. "Formation of High-Aspect-Ratio Helical Nanorods via Chiral Self-Assembly of Fullerodendrimers", **J. Phys. Chem. Lett.**, **5**, 929-934 (2014).
27. **Q. H. Wang**, C.-J. Shih, G. L. C. Paulus, and M. S. Strano\*. "Evolution of physical and electronic structures of bilayer graphene upon chemical functionalization," **Journal of the American Chemical Society**, **135**, 18866 (2013).
28. † **Q. H. Wang**, D. O. Bellisario, L. W. Drahushuk, R. M. Jain, S. Kruss, M. P. Landry, S. G. Mahajan, S. Shimizu, Z. W. Ulissi, and M. S. Strano\*. "Low Dimensional Carbon Materials for Applications in Mass and Energy Transport," **Chemistry of Materials**, **26**, 172-183 (2013).
29. † **Q. H. Wang** and M. S. Strano\*. "Carbon Nanotubes: A bright future for defects," News & Views, **Nature Chemistry**, **5**, 812-813 (2013)
30. S. Walia, S. Balendhran, H. Nili, S. Zhuiykov, G. Rosengarten, **Q. H. Wang**, M. Bhaskaran, S. Sriram, M. S. Strano and K. Kalantar-zadeh\*. "Transition metal oxides – Thermoelectric properties." **Progress in Materials Science**, **58**, 1443-1489 (2013).
31. J. T. Abrahamson, B. Sempere, M. P. Walsh, J. M. Forman, F. Şen, S. Şen, S. G. Mahajan, G. L. C. Paulus, **Q. H. Wang**, W. Choi & M. S. Strano\*. "Excess Thermopower and the Theory of Thermopower Waves," **ACS Nano**, **7**, 6533- 6544 (2013).
32. Z. Jin, W. Sun, Y. Ke, C.-J. Shih, G. L. C. Paulus, **Q. H. Wang**, B. Mu, P. Yin, and M. S. Strano\*. "Metalized DNA nanolithography for encoding and transferring spatial information for graphene patterning," **Nature Communications**, **4**, 1663 (2013).
33. S. Mahajan, **Q. H. Wang**, J. T. Abrahamson, and M. S. Strano\*. "Energy Generation by Thermopower Waves: Experimental and Analytical Progress." **AIChE Journal**, **59**, 3333-3341 (2013)
34. G. L. C. Paulus, **Q. H. Wang**, Z. W. Ulissi, T. P. McNicholas, A. Vijayaraghavan, C.-J. Shih, Z. Jin, and M. S. Strano\*. "Charge Transfer at Junctions of a Single Layer of Graphene and a Metallic Single Walled Carbon Nanotube", **Small**, **9**, 1954-196. (2013).
35. S. Shimizu, M. Ellison, K. Aziz, Q. H. Wang, Z. Ulissi, Z. Gunther, D. Bellisario & M. Strano\*. "Stochastic Pore Blocking and Gating in PDMS-Glass Nanopores from Vapor-Liquid Phase Transitions," **Journal of Physical Chemistry C**, **117**, 9641-9651 (2013).
36. C.-J. Shih, **Q. H. Wang**, Z. Jin, G. L. C. Paulus, D. Blankschtein, and M. S. Strano\*. "Disorder Imposed Limits of Mono- and Bilayer Graphene Electronic Modification using Covalent Chemistry", **Nano Letters**, **13**, 809-817 (2013).

37. † **Q. H. Wang**, K. Kalantar-Zadeh, A. Kis, J. N. Coleman, and M. S. Strano\*. "Electronics and Optoelectronics of Two-Dimensional Transition Metal Dichalcogenides," *Nature Nanotechnology*, **7**, 699-712 (2012).
38. † G. L. C. Paulus‡, **Q. H. Wang**‡, and M. S. Strano\*. "Covalent electron transfer chemistry of graphene with diazonium salts", *Accounts of Chemical Research*, **46**, 160-170 (2013).
39. C.-J. Shih, **Q. H. Wang**, S. C. Lin, K.-C. Park, Z. Jin, M. S. Strano, and D. Blankschtein\*. "Breakdown in the Wetting Transparency of Graphene", *Physical Review Letters*, **109**, 176101 (2012).
40. **Q. H. Wang**, Z. Jin, K. K. Kim, J. Kong, A. J. Hilmer, G. L. C. Paulus, C.-J. Shih, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, P. Jarillo-Herrero, and M. S. Strano\*. "Understanding and Controlling the Substrate Effect on Graphene Electron Transfer Chemistry via Reactivity Imprint Lithography", *Nature Chemistry*, **4**, 724-732 (2012).
41. C.-J. Shih, G.L.C. Paulus, **Q.H. Wang**, Z. Jin, D. Blankschtein & M.S. Strano\*. "Understanding Surfactant/Graphene Interactions Using a Graphene Field Effect Transistor: Relating Molecular Structure to Hysteresis and Carrier Mobility", *Langmuir*, **28**, 8579- 8586 (2012).
42. A. J. Hilmer, T. P. McNicholas, S. C. Lin, J. Q. Zhang, **Q. H. Wang**, J. D. Mendenhall, C. S. Song, D. A. Heller, P. W. Barone, D. Blankschtein & M. S. Strano\*. "Role of Adsorbed Surfactant in the Reaction of Aryl Diazonium Salts with Single-Walled Carbon Nanotubes", *Langmuir*, **28**, 1309-1321 (2012).
43. J. D. Emery‡, **Q. H. Wang**‡, M. Zarrouati, M. C. Hersam\*, and M. J. Bedzyk\*. "Structural analysis of PTCDA monolayers on epitaxial graphene with ultra-high vacuum scanning tunneling microscopy and high-resolution X-ray reflectivity", *Surface Science*, **605**, 1685-1693 (2011).
44. Z. Jin, T. P. McNicholas, C.-J. Shih, **Q. H. Wang**, G. L. C. Paulus, A. Hilmer, S. Shimizu, and M. S. Strano\*. "Click Chemistry on Monolayer CVD and Solution Dispersed Graphene", *Chemistry of Materials*, **23**, 3362-3370 (2011).
45. † **Q. H. Wang** and M. C. Hersam\*. "Characterization and nanopatterning of organically functionalized graphene with ultrahigh vacuum scanning tunnelling microscopy", *MRS Bulletin*, **36**, 478-542 (2011).
46. C.-J. Shih, A. Vijayaraghavan, R. Krishnan, R. Sharma, G. L. C. Paulus, J.-H. Han, M.-H. Ham, Z. Jin, S. Lin, N. F. Reuel, **Q. H. Wang**, D. Blankschtein, M. S. Strano\*. "Bi- and Tri-Layer Graphene Solutions", *Nature Nanotechnology*, **6**, 439-445 (2011).
47. J. M. P. Alaboson, **Q. H. Wang**, A. L. Lipson, J. W. Elam, M. J. Pellin, and M. C. Hersam\*. "Atomic Layer Deposition of High-k Dielectrics on Epitaxial Graphene Using an Organic Monolayer Seed Layer", *ACS Nano*, **5**, 5223-5232 (2011).
48. J. M. P. Alaboson, **Q. H. Wang**, J. A. Kellar, J. Park, J. W. Elam, M. J. Pellin and M. C. Hersam\*. "Conductive Atomic Force Microscope Nanopatterning of Epitaxial Graphene on SiC(0001) in Ambient Conditions", *Advanced Materials*, **23**, 2181-2184 (2011).
49. **Q. H. Wang** and M. C. Hersam\*. "Nanofabrication of Heteromolecular Organic Nanostructures on Epitaxial Graphene via Room Temperature Feedback-Controlled Lithography", *Nano Letters*, **11**, 589-593 (2011).
50. # J. A. Kellar, J. M. P. Alaboson, **Q. H. Wang**, and M. C. Hersam\*. "Identifying and Characterizing Epitaxial Graphene Domains on Partially Graphitized SiC(0001) Surfaces using Scanning Probe Microscopy", *Applied Physics Letters*, **96**, 143103 (2010).
51. # **Q. H. Wang** and M. C. Hersam\*. "Room temperature molecular-resolution characterization of self-assembled organic monolayers on epitaxial graphene", *Nature Chemistry*, **1**, 206-211 (2009).
52. **Q. H. Wang** and M. C. Hersam\*. "Orthogonal Self-Assembly of Interconnected One-Dimensional Inorganic and Organic Nanostructures on the Si(100) Surface", *Journal of the American Chemical Society*, **130**, 12896-12897 (2008).

53. # **Q. H. Wang** and M. C. Hersam\*. "Atomically Resolved Charge Redistribution for Ga Nanocluster Arrays on the Si(111)-7x7 Surface", **Small**, **4**, 915-919 (2008).
54. **Q. H. Wang**, T. Ivanov, and P. Aarabi\*. "Acoustic robot navigation using distributed microphone arrays", **Information Fusion** (Special Issue on Robust Speech Processing), **5**, 131-140 (2004).

## **PATENTS**

1. **Q. H. Wang**, X. Chu, A. Green, A. Yousaf, "Method for Functionalizing Transition Metal Dichalcogenides", US Patent No. US10155782B2, granted Dec. 18, 2018.
2. A. A. Green, **Q. H. Wang**, S. Saha, A. Debnath, "Biopolymer-Coated Two-Dimensional Transition Metal Chalcogenides Having Potent Antimicrobial Activity", US Patent Application filed July 30, 2019.
3. A. A. Green, M. S. Gilliam, A. Yousaf, **Q. H. Wang**, "3D-Printed Nanocomposites with Metal Diboride Nanosheets", Provisional patent filed March 29, 2019, full patent application planned for March 2020.
4. **Q. H. Wang**, D. Li, M. Gilliam, A. A. Green, "Adsorption and Removal of Heavy Metal Ions from Water by Transition Metal Dichalcogenides", US Patent Application No. 16/191,006, filed Nov. 14, 2018.
5. **Q. H. Wang** and M. C. Hersam, "Self-Assembled Organic Monolayers on Graphene and Methods of Making and Using", US Patent Application No. 12/753,942, filed April 5, 2010.

## **PRESENTATIONS**

### **Keynote and Invited Presentations at Conferences**

1. **Q. H. Wang**, "Defect-Mediated Chemical Modification of Semiconducting 2D Metal Chalcogenides", Invited Speaker, Materials Research Society (MRS) Fall Meeting, Boston, MA, December 2019
2. **Q. H. Wang**, "Semiconducting Layered Chalcogenide Materials: Strategies for Chemical Functionalization and Transformation", Keynote Speaker at 20<sup>th</sup> International Union of Materials Research Societies International Conference in Asia (IUMRS-ICA), Perth, Australia, September 2019
3. **Q. H. Wang**, "Strategies for chemical modification of semiconducting 2D metal chalcogenides: functionalization, transformation, and self-assembly", Invited Speaker, American Chemical Society (ACS) Fall Meeting, San Diego, CA, August 2019
4. **Q. H. Wang**, "Self-Assembled van der Waals Heterostructures of 2D Materials and Organic Molecules." Invited Speaker, Center for Nanoscale Materials / Advanced Photon Source Annual Users Meeting, Argonne National Laboratory, Argonne, IL, May 2018
5. **Q. H. Wang**, "Interfacial Engineering of Two-Dimensional Nanomaterials: Chemical Functionalization and Scanning Probe Characterization." Invited Speaker, Electrochemical Society (ECS) PRiME Meeting, Honolulu, October 2016

### **Contributed Oral Presentations at Conferences**

1. **Q. H. Wang**, "Formation of MoO<sub>3</sub> and WO<sub>3</sub> Nanoscrolls from MoS<sub>2</sub> and WS<sub>2</sub> by Atmospheric Air Plasma". Oral presentation at Materials Research Society (MRS) Fall Meeting, Boston, MA, November 2017.
2. **Q. H. Wang**, "Lithium-Free Covalent Chemical Functionalization of Two-Dimensional Molybdenum Disulfide", Oral presentation accepted for AVS 64th International Symposium & Exhibition, Tampa, FL, October 2017

3. X. S. Chu, A. Yousaf, D. O. Li, A. A. Tang, A. Debnath, D. Ma, A. A. Green and **Q. H. Wang**. "Biofunctionalization and Reaction Kinetics for Direct Covalent Modification of Pristine MoS<sub>2</sub>", Poster presentation by X. S. Chu at the Materials Research Society (MRS) Spring Meeting, Phoenix, AZ, March 2016.
4. E. J. G. Santos, D. Scullion, X. S. Chu, D. O. Li, N. P. Guisinger, and **Q. H. Wang**. "Rotational Superstructure in van der Waals Heterostructure of Self-Assembled C<sub>60</sub> Monolayer on the WSe<sub>2</sub> Surface", Poster presentation by D. O. Li at the Materials Research Society (MRS) Spring Meeting, Phoenix, AZ, April 2016.
5. **Q. H. Wang**, C.-J. Shih, G. L. C. Paulus, and M. S. Strano, "The Evolution of the Physical and Electronic Structure of Bilayer Graphene upon Chemical Functionalization", Oral presentation by Q. H. Wang at the American Institute of Chemical Engineers (AIChE) Annual Meeting, San Francisco, CA, November 2013.
6. **Q. H. Wang**, C.-J. Shih, G. L. C. Paulus, and M. S. Strano, "The Evolution of the Physical and Electronic Structure of Bilayer Graphene upon Chemical Functionalization", Poster presentation by Q. H. Wang at the Materials Research Society (MRS) Fall Meeting, Boston, MA, December 2013.
7. **Q. H. Wang**, Z. Jin, K. K. Kim, J. Kong, A. J. Hilmer, G. L. C. Paulus, C.-J. Shih, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, P. Jarillo-Herrero, and M. S. Strano, "Understanding and Controlling the Substrate Effect on Graphene Electron Transfer Chemistry via Reactivity Imprint Lithography", Oral presentation by Q. H. Wang at the Materials Research Society (MRS) Fall Meeting, Boston, MA, November 2012.
8. **Q. H. Wang**, Z. Jin, K. K. Kim, J. Kong, A. J. Hilmer, G. L. C. Paulus, C.-J. Shih, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, P. Jarillo-Herrero, and M. S. Strano, "Understanding and Controlling the Substrate Effect on Graphene Electron Transfer Chemistry via Reactivity Imprint Lithography", Oral presentation by Q. H. Wang at the American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, PA, October 2012.
9. **Q. H. Wang**, Z. Jin, K. K. Kim, J. Kong, A. J. Hilmer, G. L. C. Paulus, C.-J. Shih, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, P. Jarillo-Herrero, and M. S. Strano, "Understanding and Controlling the Substrate Effect on Graphene Electron Transfer Chemistry via Reactivity Imprint Lithography", Oral presentation by Q. H. Wang at the American Chemical Society (ACS) Spring Meeting, Philadelphia, PA, August 2012.
10. **Q. H. Wang**, Z. Jin, K. K. Kim, J. Kong, A. J. Hilmer, G. L. C. Paulus, C.-J. Shih, J. D. Sanchez-Yamagishi, K. Watanabe, T. Taniguchi, J. Kong, P. Jarillo-Herrero, and M. S. Strano. "Chemical reactivity imprint lithography on graphene: Controlling the substrate influence on electron transfer reactions", Oral presentation by Q. H. Wang at the American Physical Society (APS) March Meeting, Boston, MA, February 2012.
11. **Q. H. Wang** and M. C. Hersam. "Room Temperature Molecular-Resolution Characterization of Self-Assembled Organic Monolayers on Epitaxial Graphene", Oral presentation by Q. H. Wang at the American Vacuum Society (AVS) 56<sup>th</sup> International Symposium, San Jose, CA, November 2009.
12. **Q. H. Wang** and M. C. Hersam. "Atomic Scale Characterization of Charge Redistribution for Ga Nanocluster Arrays on the Si(111)-7x7 Surface", Oral presentation by Q. H. Wang at the American Vacuum Society (AVS) 55<sup>th</sup> International Symposium, Boston, MA, October 2008.
13. **Q. H. Wang** and M. C. Hersam. "Atomically Resolved Charge Redistribution for Gallium Nanocluster Arrays on the Si(111)-7x7 Surface", Oral presentation by Q. H. Wang at the International Conference on Nanoscience + Technology (ICN+T), Keystone, CO, July 2008.
14. **Q. H. Wang** and M. C. Hersam. "Atomic Scale Characterization of Charge Redistribution for Ga Nanocluster Arrays on the Si(111)-7x7 Surface", Oral presentation by Q. H. Wang at the American Vacuum Society (AVS) Prairie Chapter Meeting, Milwaukee, WI, June 2008.

15. **Q. H. Wang**, N. P. Guisinger, S. P. Elder, N. L. Yoder, and M. C. Hersam. "Ultra-high vacuum scanning tunneling microscopy characterization of nitroxyl free radicals on the Si(111)-7x7 surface", Oral presentation by Q. H. Wang at the Electronic Materials Conference (EMC), Notre Dame, IN, June 2007.

### ***Invited Seminars***

1. **Q. H. Wang**, "Understanding and engineering the interfaces of 2D nanomaterials." Arizona State University, Nanoscale Science Seminar, October 2014.
2. **Q. H. Wang** and M. S. Strano, "Understanding and Engineering Molecular Interactions and Electronic Transport at Graphene Interfaces", Oral presentation by Q. H. Wang on behalf of M. S. Strano at the Materials Research Society (MRS) Spring Meeting, San Francisco, April 2014.
3. **Q. H. Wang**, "Engineering the chemical interfaces of 2D nanomaterials." Massachusetts Institute of Technology (MIT), Department of Mechanical Engineering, March 2014.
4. **Q. H. Wang**, "Understanding the chemistry of graphene and two-dimensional nanomaterials." University College London (UK), Department of Chemical Engineering, January 2014.
5. **Q. H. Wang**, "Understanding the chemistry of graphene and two-dimensional nanomaterials." Purdue University, School of Materials Science and Engineering, January 2014.
6. **Q. H. Wang**, "Understanding the chemistry of graphene and two-dimensional nanomaterials." Arizona State University, Materials Science and Engineering, January 2014.
7. **Q. H. Wang**, "Understanding the chemistry of graphene and two-dimensional nanomaterials." University of California at Los Angeles (UCLA), Department of Chemical and Biomolecular Engineering, January 2014.
8. **Q. H. Wang**, "Understanding the chemistry of graphene and two-dimensional nanomaterials." Imperial College London (UK), Department of Chemical Engineering, December 2013.
9. **Q. H. Wang**, "Exploring Chemistry in Two Dimensions: Chemical Functionalization and Patterning of Graphene." Simon Fraser University (Canada), November, 2013.
10. **Q. H. Wang** and M. S. Strano, "Use of doping trajectories and Raman spectroscopy in the understanding of graphene chemistry", Oral presentation by Q. H. Wang on behalf of M. S. Strano at the American Chemical Society (ACS) Fall Meeting, Indianapolis, IN, September 2013.
11. **Q. H. Wang**, "Graphene quality: Definitions, characterization, and applications", Graphene Commercialisation and Applications Summit 2013, London, UK, June 2013
12. **Q. H. Wang**, "Tuning the Electronic and Chemical Properties of Graphene at the Nanoscale." Harvard University, School of Engineering and Applied Science, Electrical Engineering, February 2013.
13. **Q. H. Wang**, "Chemical Functionalization and Patterning of Graphene." University of Texas at Austin, Department of Chemical Engineering, January 2013.
14. **Q. H. Wang**, "Advances in Understanding the Chemistry of Graphene: Fundamentals and Applications." Graphene Science and Applications Conference, MITRE Corp., McLean, VA, March 2012.
15. **Q. H. Wang**, "Chemical imprint lithography on graphene: Controlling the substrate influence on electron transfer reactions." Boston Area Carbon Nanoscience (BACON) Meeting, Massachusetts Institute of Technology, November 2011.
16. **Q. H. Wang**, "STM Imaging and Nanopatterning of Self-Assembled Organic Monolayers on Epitaxial Graphene." Boston Area Carbon Nanoscience (BACON) Meeting, Massachusetts Institute of Technology, November 2010.

## PROFESSIONAL ACTIVITIES AND SERVICE

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### EXTERNAL SERVICE

#### **Conference Organization**

- **European Materials Research Society (E-MRS)**, 2020 Spring Meeting, Strasbourg, France  
Symposium Co-Organizer, “G: Energy Materials: Chemical functionalization of 2D materials” (organizing activities throughout 2019)
- **American Physical Society (APS)** March Meeting, March 2019, Boston  
Focus Session Organizer, “12.1.2: 2D Materials: Semiconductors”
- **Materials Research Society (MRS)** Fall Meeting, November 2018, Boston  
Symposium Co-Organizer, “EP03: Beyond-Graphene 2D Materials—Synthesis, Properties and Device Applications”
- **American Physical Society (APS)** March Meeting, March 2017, New Orleans  
Focus Session Organizer, “12.1.1: 2D Materials: Synthesis, Defects, Structure and Properties”

#### **Conference Chairing**

- **20<sup>th</sup> International Union of Materials Research Societies International Conference in Asia (IUMRS-ICA)**, Perth, Australia, Session Chair (Sept. 2019)  
A: Electronic and Optical Materials
- **Materials Research Society (MRS)** Fall 2018 Meeting, Boston, Session Co-Chair  
EP03.01: Electronic Properties, Processes and Devices I  
EP03.02: Scalable Synthesis and Large Area Growth of 2D Materials I  
EP03.03: Scalable Synthesis and Large Area Growth of 2D Materials II  
EP03.06: Electronic Properties, Processes and Devices II
- **Materials Research Society (MRS)** Spring 2017 Meeting, Phoenix, Session Co-chair  
NM1.8: Controlled Scalable Synthesis of 2D TMDC Materials and Heterostructures II
- **Electrochemical Society (ECS) PRiME**, October 2016, Honolulu, Session Co-chair  
Low Dimensional Materials for Catalysis and Solar Fuel Production

#### **Professional Affiliations**

American Chemical Society (ACS)  
American Vacuum Society (AVS)  
American Physical Society (APS)  
Electrochemical Society (ECS)  
Materials Research Society (MRS)

#### **Journal Review**

ACS Applied Materials and Interfaces  
ACS Applied Nano Materials  
ACS Materials Letters  
ACS Nano  
Advanced Composites and Hybrid Materials  
Advanced Electronic Materials  
Advanced Functional Materials  
Advanced Materials  
Advanced Materials Interfaces  
Advanced Science  
AIChE Journal  
Applied Materials Today  
Chemistry a European Journal  
Chemistry of Materials

Composites Science and Technology  
IEEE Transactions on Electron Devices  
Industrial & Engineering Chemistry Research  
Journal of Materials Chemistry C  
Journal of Physical Chemistry Letters  
Journal of Vacuum Science & Technology B  
Langmuir  
Laser and Photonic Reviews  
MRS Advances  
Nano Letters  
Nanoscale  
Nanoscale Research Letters  
Nature Communications  
Nature Reviews Materials



NPG Asia Materials  
Particle & Particle Systems Characterization  
Physical Review Letters

Physical Review Materials  
Physical Review Research  
Small Methods

### ***Proposal Review***

American Chemical Society Petroleum Research Fund (ACS PRF)  
Army Research Office (ARO)  
Department of Energy Basic Energy Sciences (DOE BES)  
Dutch Research Council (NWO)  
National Science Foundation (NSF)  
Nanotechnology-Enabled Water Treatment (NEWT) ERC (National Science Foundation)

### ***Community Outreach***

- ASU Open Door, organizing and running the “Exploring Nanotechnology” booth (2015 – Present)
- Nano@Home website ([www.nanoathome.com](http://www.nanoathome.com)), organizing and running (2018 – Present)

### **ASU INTERNAL SERVICE**

#### **Fulton Schools of Engineering**

- FURI Faculty Committee member (Fall 2014 – Present)

#### **School for Engineering of Matter, Transport and Energy**

- Advanced quantum materials faculty search committee member (Fall 2019 – Spring 2020)
- SEMTE vision statement committee member (Spring 2017)

#### **Materials Science and Engineering Program**

- MSE Undergraduate Affairs Committee member (2016 – Present)
- MSE Seminar Committee member (2015 – Present)
- MSE Faculty Meeting minutes recording (2018 – Present)

## **TEACHING AND MENTORING**

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### **MENTORING**

#### **Postdoc**

1. Dr. Duo O. Li (Summer 2019 – present)

#### **PhD Degrees**

##### *Chair:*

1. Yuqi Guo (PhD in Materials Science and Engineering, in progress)
2. Suneet Kale (PhD in Chemistry, in progress)
3. Duo O. Li (PhD in Materials Science and Engineering, Spring 2019) – currently postdoc in Prof. Wang's group, will be starting at Intel
4. Ximo S. Chu (PhD in Materials Science and Engineering, Spring 2018) – currently at Intel

##### *Committee member:*

1. Xiaoyan Ying (in progress)
2. Dini Wang (in progress)
3. Matthew Gilliam (in progress)
4. Sanchari Saha (in progress)
5. Ana Barrios (in progress)
6. Shaohua Chen (in progress)
7. Yusi Xie (in progress)
8. Pablo Guimera Coll (in progress)

9. Steven D'Souza (in progress)
10. Woo Jung Shin (Spring 2019)
11. Takayuki Nosaka (Spring 2018)
12. Ahmed Yousaf (Spring 2018)
13. Yaopengxiao Xu (Spring 2018)
14. Shaohua Chen (Spring 2018)
15. Amr Ibrahim (Spring 2018)
16. Chengwei Wang (Fall 2015)

## **MS Degrees**

### *Chair:*

1. Mu-Tao Chen (MS in Materials Science and Engineering, Fall 2019)
2. Mahmoud Matar Abed (MS in Materials Science and Engineering, Fall 2019)
3. Suneet Kale (MS in Nanoscience, Fall 2017)
4. Samuel Shin (MS in Materials Science and Engineering, Spring 2017)

### *Committee member:*

- Yizhi Zhang (in progress)
- Ramteja Kondakini (Summer 2019)
- Harshwardhan Wadikar (Spring 2019)
- Hangkun Jing (Spring 2018)

## **Undergraduates**

1. Serita Sulzman (BS in Materials Science and Engineering, Barrett Honors College thesis in progress)
2. Janice Baab (BS in Chemical Engineering)
3. Zhikai Liu (BS in Materials Science and Engineering)
4. Cindy Wong (BS in Materials Science and Engineering, Barrett Honors College thesis Spring 2019)
5. Akshay Nalla (BS in Mechanical Engineering, Barrett Honors College thesis Spring 2019)
6. Kaylie Lam (BS in Materials Science and Engineering)
7. Jason Enriquez (BS/MS in Materials Science and Engineering)
8. Tyler Gleckler (BS in Chemical Engineering)
9. Jonathan Schwartz (BS in Chemical Engineering)
10. David Reynolds (BS in Materials Science and Engineering)
11. Andrew Mullen (BS in Materials Science and Engineering, Barrett Honors College)

## **Student Achievements**

- ASU Fulton Undergraduate Research Initiative (FURI) Grant:
  - Serita Sulzman, 2019
  - Janice Baab, 2019
  - Zhikai Liu, 2019
  - Cindy Wong, 2018-2019
  - Kaylie Lam, 2017
  - Jason Enriquez, 2016-2017
  - David Reynolds, 2016
- Penn State University Summer REU Program (Cindy Wong, 2019)
- Harvard University Summer REU Program (Jonathan Schwartz, 2016)
- ASU FURI Luncheon Speaker (Jason Enriquez, 2017)
- ASU FURI Outstanding Student (Cindy Wong, 2018)
- Bidstrup Research Award (Cindy Wong, 2018-2019)

## **Awards for Teaching**

- **Fulton Top 5% Faculty Teaching Award** (2019)

### ***Courses Taught***

- **MSE 523: Structural and Mechanical Properties of Materials** (graduate course)  
Fall 2014, Fall 2015, Fall 2016, Fall 2018, Fall 2019
- **MSE 450 / MSE 510: Introduction to Materials Characterization** (split section undergraduate / graduate course)  
Spring 2016, Spring 2017, Spring 2018, Spring 2019, Spring 2020
- **MSE 591: Materials Science and Engineering Seminar** (graduate course)  
Spring 2017