Biographical Sketch— Jiaxing Huang

Materials Science & Engineering
Northwestern University

Phone: (847)-491-5940
Email: jiaxing-huang@northwestern.edu

2220 Campus Drive
Evanston, IL 60208-3108

YouTube channel "Nanoeducation": https://goo.gl/adneZZ
Website: http://www.matsci.northwestern.edu/faculty/jh.html

PROFESSIONAL PREPARATION

- Miller Research Fellow (2004-2007), University of California, Berkeley
  Sponsor: Prof. Peidong Yang
- PhD in Chemistry (2000-2004), University of California, Los Angeles
  Advisor: Prof. Richard B. Kaner
- BS in Chemical Physics (1995-2000), University of Science and Technology of China
  Research Advisor: Prof. Yi Xie

PROFESSIONAL APPOINTMENTS

2017-	Professor of Materials Science and Engineering, Northwestern University
2013-17	Associate Professor of Materials Science and Engineering, Northwestern University
2011-13	Morris E. Fine Junior Professor in Materials and Manufacturing, Northwestern University
2007-13	Assistant Professor of Materials Science and Engineering, Northwestern University

RESEARCH AND TEACHING PHILOSOPHIES

- Create new knowledge, materials and techniques that are potentially useful for better living
- Teach to develop intuition, "unlock" creativity and bring the best out of students and ourselves

HONORS AND AWARDS

- Highly Cited Researcher (Thomson Reuters/Clarivate Analytics, 2014, 2015, 2016, 2017, 2018)
- Humboldt Research Award (Alexander von Humboldt-Foundation, Germany, 2016)
- Most Cited Researcher in Materials Science and Engineering (Scopus, Elsevier, 2016)
- JSPS Short-term Invitation Fellowship (Japan Society for the Promotion of Science, 2016)
- Guggenheim Fellowship (John Simon Guggenheim Memorial Foundation, 2014-2015)
- Fissan-Pui-TSI Award (International Aerosol Research Assembly, 2014)
- AVS Prairie Chapter Early Career Award (American Vacuum Society, 2014)
- Gustav Olling Outstanding Young Manufacturing Engineer Award (Society of Manufacturing Engineers, 2013)
- Inaugural ISEN Early Career Investigator Award (Initiative for Sustainability and Energy at Northwestern, 2011)
- Searle Center for Teaching Excellence Junior Fellow (Northwestern University, 2011-2012)
- Sloan Research Fellow (The Alfred P. Sloan Foundation, 2011)
- NSF CAREER Award (National Science Foundation, 2010-2015)
- Miller Research Fellow (UC-Berkeley, 2004-2007)
- National Starch and Chemical Award for Outstanding Graduate Research in Polymer Science and Engineering (POLY/PMSE divisions, American Chemical Society, 2006)
- IUPAC Young Chemists Prize (The International Union of Pure & Applied Chemistry, 2005)

SELECTED EXTERNAL PROFESSIONAL SERVICES

- Member of editorial/advisory board:

Carbon (American Carbon Society, Elsevier), *Applied Materials Today* (Elsevier), *Journal of Materials Chemistry – A*, *Materials Chemistry Frontiers* (Royal Society of Chemistry), *Chemistry of Materials* (American Chemical Society), *Science China Technological Sciences*, *Science China Chemistry* (Science China Press/Springer), *Matter* (Cell Press, 2019-)

- Guest editor:
  Special issue for Journal of Solid State Chemistry (Elsevier, 2015), *Advanced Drug Delivery Review* (Elsevier, 2016), *Web theme issue for ACS Nano, ACS Phonics, Chemistry of Materials, Nano Letters* (American Chemical Society, 2016), *Materials Chemistry Frontiers* (Royal Society of Chemistry, 2019), Journal of Materials Science & Technology (Elsevier, 2019)

For professional societies and conferences

- Member of advisory committee:
  - New Diamond and Nano Carbons Conference (2013 and 2016)
  - International Conference of Young Researchers on Advanced Materials (2014)
- Symposium organizer/leader:
  - Founding organizer of International Workshop on Graphene Oxide and Related Materials (2016, 2017), ENFL Symposium on Graphene for Energy and Fuels, ACS Meeting (2012-14)
  - Founding organizer of the Northwestern Workshop on Visual Representation of Research (2016, 2018)
  - The 5th International Conference on Multifunctional, Hybrid and Nanomaterials (Lisboa, Portugal, 2017)
  - Functional 2D Layered Materials, MRS meeting (2011)

Reviewer, evaluator and judge for award agencies

- Official Nominator for the Japan Prize (Japan)
- Official Nominator for the Kyoto Prize (Japan)
- President's Science Award (Singapore)
- State Natural Science Award (China)
- Tan Kah Kee Science Awards (China)

SELECTED RESEARCH DISCOVERIES

- 2D nanofluidics
- Materials for safer hair dyes
- Fatigue-resistant electrocatalysis
- Self-healing barrier coatings for metal protection
- Physical functions of information-bearing patterns
- Bulk nanostructured materials from well-defined nanoscale building blocks
- Crumpled graphene balls: Energy storage, water treatment, and lubrication
- Additive-free carbon nanotube/solvent systems with polymer-like processability
- All-carbon photovoltaics
- Graphene oxide sheets as 2D surfactant
- Electrospray assisted Langmuir-Blodgett assembly
- Up-cycling of silicon sludge waste for Li ion batteries
- Fluorescence quenching microscopy for seeing 2D materials
- Metal nanocrystals: Synthesis, assembly and bulk processing
- Organic nanocrystals: Orientation-controlled growth and chemical reactivity
- Defect-mediated surface functionalization of 2D metal dichalcogenide sheets

PATENTS AND INVENTION DISCLOSURES

- From Northwestern research: 8 US and 1 Korean patents issued, 3 licensed, many more pending
- From prior research: 4 US patents issued and licensed

SELECTED PUBLICATIONS

Google scholar profile: http://scholar.google.com/citations?user=sbfLJqUAAAAJ&hl=en

Total number of publications: 128; Average citation per paper > 200; H-index: 70 (as of December 2018)

Selected publications at Northwestern (* Denotes corresponding author)

1. Che-Ning Yeh, Haiyue Huang, Alane Tarianna O. Lim, Ren-Huai Jhang, Chun-Hu Chen* and Jiaxing Huang* "Binder-free Graphene Oxide Doughs" *Nature Communications*, **2019**, in press
2. Alane Tarianna O. Lim, Chenlong Cui, Hee Dong Jang and Jiaxing Huang* "Self-healing Microcapsule-thickened Oil Barrier Coatings" *Research*, **2019**, in press
3. Hun Park, Ki Hyun Lee, Young Bae Kim, Swapnil B. Ambade, Sung Hyun Noh, Wonsik Eom, Jun Yeon Hwang, Won Jun Lee,* Jiaxing Huang* and Tae Hee Han* "Dynamic Assembly of Liquid Crystalline Graphene Oxide Gel Fibers for Ion Transport" *Science Advances*, **2018**, 4(11), eaau2104
4. Rafael A. Soler-Crespo, Wei Gao, Lily Mao, Hoang T. Nguyen, Michael R. Roenbeck, Jeffrey T. Paci, Jiaxing Huang,* SonBinh T. Nguyen* and Horacio D. Espinosa* "The Role of Water in Mediating Interfacial Adhesion and Shear Strength in Graphene Oxide" *ACS Nano*, **2018**, 12, 6089-6099
5. Kevin Chiou, Segi Byun, Jaemyung Kim and Jiaxing Huang* "Additive-free Carbon Nanotube Dispersions, Pastes, Gels and Doughs in Cresols" *Proceeding of National Academy of Sciences*, **2018**, 115, 5703-5708 (featured in *Materials Today*, *Chem Europe*, *Ceramic Tech Today*)
6. Chong Luo, Lingye Zhou, Kevin Chiou and Jiaxing Huang* "Multifunctional Graphene Hair Dye" *Chem*, **2018**, 4, 784-794 (featured on cover, and in *Science*, *Scientific American*, *C&EN*, *Chemistry World*, *The New York Times*, *Daily Mail*, *Huffington Post*, *BBC*, *NPR*, *Fast Company*, *TeenVogue*, *Refinery29*, *Allure* and many other places)
7. Wei Hao, Kevin Chiou, Yiming Qiao, Yanming Liu, Chengyi Song, Tao Deng* and Jiaxing Huang* "Crumpled Graphene Balls-based Broadband Solar Absorber" *Nanoscale*, **2018**, 10, 6306-6312
8. Chong Luo, Che-Ning Yeh, Jesus M. Lopez Baltazar, Chao-Lin Tsai and Jiaxing Huang* "A Cut-and-paste Approach to 3D Graphene Oxide-based Architectures" *Advanced Materials*, **2018**, *30*, 1706229 (featured in *Polymer Science Forum*)
9. Jun Gao, Andrew R. Koltonow, Kalyan Raidongia, Bernard Beckerman, Niels Boon, Erik Luijten, Monica Olvera de la Cruz, Jiaxing Huang* "Kirigami Nanofluidics" *Materials Chemistry Frontiers*, **2018**, 2, 475-482 (featured on the inside cover, and in a Spotlight article in *Nanowerk.com*)
10. Shan Liu, Aoxuan Wang, Qianqian Li, Jinsong Wu, Xianfei Hu, Feiyu Kang, Quan-Hong Yang, Jiaxing Huang* and Jiayan Luo* "Crumpled Graphene Balls Stabilized Dendrite-Free Lithium Metal Anodes" *Joule*, **2018**, 2, 184-193 (featured on cover)
11. Andrew Koltonow, Chong Luo, Jiayan Luo and Jiaxing Huang* "Graphene Oxide Sheets in Solvents: To Crumple or Not To Crumple?" *ACS Omega*, **2017**, 2, 8005-8009
12. Chenlong Cui, Alane T.O. Lim and Jiaxing Huang* "A Cautionary Note on Graphene Anti-corrosion Coatings" *Nature Nanotechnology*, **2017**, 12, 834-835 (Commentary on the fundamental hypothesis, problems and potential solutions in graphene-based anti-corrosion coatings)

13. Hongyun Ma, Debin Kong, Yue Xu, Xiaoying Xie, Ying Tao, Zhichang Xiao, Wei Lv, Hee Dong Jang, Jiaxing Huang* and Quan-Hong Yang* "A Disassembly-reassembly Approach to RuO2/Graphene Composites for Ultrahigh Volumetric Capacitance Supercapacitor" *Small*, **2017**, 13, 1701026 (featured on back cover)

14. Zhao Wang, Rajesh Sahadevan, Che-Ning Yeh, Todd J. Menkhaus, Jiaxing Huang* and Hao Fong* "Hot-Pressed Polymer Nanofiber Supported Graphene Membrane for High-Performance Nanofiltration" *Nanotechnology*, **2017**, 28, 31LT02

15. Victor Brar,* Andrew R. Koltonow and Jiaxing Huang* "New Discoveries and Opportunities from Two-Dimensional Materials" *ACS Photonics*, **2017**, 4, 407-411

16. Andrew R. Koltonow and Jiaxing Huang* "Two-dimensional Nanofluidics" *Science*, **2016**, 351, 1395-1396 (Perspective on the hypothesis, progress and challenges of 2D nanofluidics)

17. Xuan Dou, Andrew R. Koltonow, Xingliang He, Hee Dong Jang, Qian Wang,* Yip-Wah Chung* and Jiaxing Huang* "Self-dispersed Crumpled Graphene Balls in Oil for Friction and Wear Reduction" *Proceeding of National Academy of Sciences*, **2016**, 13, 1528–1533 (Cover article, featured in *C&EN*, *Tribology & Lubrication Technology*, *Fortune.com*)

18. Jiayan Luo, Jun Gao, Aoxuan Wang, and Jiaxing Huang* "Bulk Nanostructured Materials Based on Two-Dimensional Building Blocks: A Roadmap" *ACS Nano*, **2015**, 9, 9432-9436 (Perspective advocating the study of new bulk nanostructured materials. Featured in a Spotlight article in *Nanowerk.com* on Feb 2016)

19. Huali Nie, Xuan Dou, Zhihong Tang, Hee Dong Jang and Jiaxing Huang* "High-Yield Spreading of Water-Miscible Solvents on Water for Langmuir-Blodgett Assembly" *Journal of the American Chemical Society*, **2015**, 137, 10683-10688 (Featured in *C&EN*, *ChemEurope.com*. First author H. Nie profiled in the blog "Women in Nanoscience")

20. Xiaoding Wei, Lily Mao, Rafael A. Soler-Crespo, Jeffrey T. Paci, Jiaxing Huang,* SonBinh T. Nguyen* and Horacio D. Espinosa* "Plasticity and Ductility in Graphene Oxide - A Novel Mechanochemically Induced Damage-Tolerance Mechanism", *Nature Communications*, **2015**, 6, 8029

21. Jiao-Jing Shao, Kalyan Raidongia, Andrew R. Koltonow and Jiaxing Huang* "Self-assembled Two-dimensional Nanofluidic Proton Channels with High Thermal Stability" *Nature Communications*, **2015**, 6, 7602 (Featured in *Materials360*)

22. Hee Dong Jang,* Hyekyoung Kim, Hankwon Chang, Jiwoong Kim, Kee Min Roh, Ji-Hyuk Choi, Bong-Gyoo Cho, Eunjun Park, Hansu Kim,* Jiayan Luo and Jiaxing Huang* "Aerosol-Assisted Extraction of Silicon Nanoparticles from Wafer Slicing Waste for Lithium Ion Batteries" *Scientific Reports*, **2015**, 5, 9431 (Featured in *C&EN*)

23. Stanley S. Chou,* Yi-Kai Huang, Jaemyung Kim, Bryan Kaehr, Brian M. Foley, Ping Lu, Conner Dykstra, Patrick E. Hopkins, C. Jeffrey Brinker, Jiaxing Huang* and Vinayak P. Dravid* "Controlling the Metal to Semiconductor Transition of MoS_2 and WS_2 in Solution" *Journal of the American Chemical Society*, **2015**, 137, 1742-1745 (In *JACS* Spotlights)

24. Che-Ning Yeh, Kalyan Raidongia, Jiaojing Shao, Quan-Hong Yang and Jiaxing Huang* "On the Origin of the Stability of Graphene Oxide Membrane in Water" *Nature Chemistry*, **2015**, 7, 166-170 (Featured in *Science*, *C&EN*, *Materials Today*, *Materials360*. First author C-N. Yeh profiled in the blog "Women in Nanoscience")

25. Alexander J. Smith, Chen Wang, Dongning Guo, Cheng Sun*, Jiaxing Huang* "Repurposing Blu-ray Movie Discs as Low-cost, Quasi-random Nanoimprinting Templates for Photon Management" *Nature Communications*, **2014**, 5, 5517 (Featured in *Nature, C&EN, Scientific American, The Washington Post, NBC, PBS, NPR and many other places*)

26. Alexander J. Smith, Yung-Huang Chang, Kalyan Raidongia, Tzu-Yin Chen, Lain-Jong Li*, and Jiaxing Huang* "Molybdenum Sulfide Supported on Crumpled Graphene Balls for Electrocatalytic Hydrogen Production" *Advanced Energy Materials*, **2014**, 4, 1400398

27. Cheng Wei Lin, Zhibo Zhao, Jaemyung Kim and Jiaxing Huang* "Pencil Drawn Strain Gauges and Chemiresistors on Paper" *Scientific Reports*, **2014**, 4, 3812 (Featured in *Materials360, Fox News – Tech Take Live*)

28. Deepti Krishnan, Kalyan Raidongia, Jiaojing Shao and Jiaxing Huang* "Graphene Oxide Assisted Hydrothermal Carbonization of Carbon Hydrates" *ACS Nano*, **2014,** 8, 449-457

29. Alvin T. L. Tan, Jaemyung Kim, Jing-Kai Huang, Lain-Jong Li and Jiaxing Huang* "Seeing 2D Sheets on Arbitrary Substrates by Fluorescence Quenching Microscopy" *Small*, **2013**, 9, 3253-3258 (Featured on frontispiece)

30. Jaemyung Kim, Segi Byun, Alexander J. Smith, Jin Yu, and Jiaxing Huang* "Enhanced Electrocatalytic Properties of Transition Metal Dichalcogenides Sheets by Spontaneous Gold Nanoparticle Decoration", *Journal of Physical Chemistry Letters*, **2013**, 4, 1227-1232 (Featured in *Chemistry World*)

31. Stanley S. Chou, Mrinmoy De, Jaemyung Kim, Conner Dykstra, Jiaxing Huang*, Vinayak P. Dravid* "Ligand conjugation of chemically exfoliated MoS_2", *Journal of the American Chemical Society*, **2013**, 134, 16725-16733

32. Jiayan Luo, Hee Dong Jang and Jiaxing Huang* "Effect of Sheet Morphology on the Scalability of Graphene-Based Ultracapacitors" *ACS Nano*, **2013**, 7, 1464-1471 (Featured in *C&EN*)

33. Jiayan Luo, Jaemyung Kim and Jiaxing Huang* "Material Processing of Chemically Modified Graphene: Some Challenges and Solutions" *Accounts of Chemical Research*, **2013**, 46, 2225-2234 (Cover article)

34. Jaemyung Kim, Laura J. Cote and Jiaxing Huang* "Two Dimensional Soft Material: New Faces of Graphene Oxide" *Accounts of Chemical Research*, **2012**, 45, 1356-1364

35. Kalyan Raidongia and Jiaxing Huang* "Nanofluidic Ion Transport through Reconstructed Layered Materials" *Journal of the American Chemical Society*, **2012**, 134, 16528-16531 (Featured in *Materials Today*, *IEEE Spectrum*)

36. Stanley S. Chou, Mrinmoy De,* Jiayan Luo, Vincent M. Rotello, Jiaxing Huang* and Vinayak P. Dravid* "Nanoscale Graphene Oxide (nGO) as Artificial Receptors: Implications for Biomolecular Interactions and Sensing" *Journal of the American Chemical Society*, **2012**, 134, 16725-16733

37. Jian Yao Zheng, Yongli Yan, Xiaopeng Wang, Yong Sheng Zhao,* Jiaxing Huang and Jiannian Yao* "Wire-on-wire Growth of Fluorescent Organic Heterojunctions" *Journal of the American Chemical Society,* **2012**, 134, 2880-2883 (Featured in *Chemistry World*)

38. Jiayan Luo, Xin Zhao, Jinsong Wu, Hee Dong Jang, Harold H. Kung and Jiaxing Huang* "Crumpled Graphene-Encapsulated Si Nanoparticles for Lithium Ion Battery Anodes" *Journal of Physical Chemistry Letters*, **2012**, 3, 1824-1829

39. Vincent C. Tung, Jen-Hsien Huang, Jaemyung Kim, Alexander J. Smith, Chih-Wei Chu, Jiaxing Huang* "Towards Solution Processed All-Carbon Solar Cells: A Perspective" *Energy & Environmental Science*, **2012**, 5, 7810-7818 (Featured on inside cover, and in RSC web themed issue: "Rising stars and young nanoarchitects in materials science")

40. Jiayan Luo, Vincent C. Tung, Hee Dong Jang, and Jiaxing Huang* "Graphene Oxide based Conductive Glue as Binder for Ultracapacitor Electrodes" *Journal of Materials Chemistry*, **2012**, 22, 12993-12996

41. Kwonnam Sohn, Yoon Joo Na, Hankwon Chang, Ki-Min Roh, Hee Dong Jang and Jiaxing Huang* "Capillary Molding Route to Oil Absorbing Graphene Capsules" *Chemical Communications*, **2012**, 48, 5968-5970 (Cover article, featured in *Chemistry World*)

42. Deepti Krishnan, Franklin Kim, Jiayan Luo, Rodolfo Cruz-Silva, Laura J Cote, Hee Dong Jang and Jiaxing Huang* "Energetic Graphene Oxide: Challenges and Opportunities" *Nano Today*, **2012**, 7, 137-152 (invited Review, a top 25 Hot Article)

43. Vincent C. Tung, Jaemyung Kim and Jiaxing Huang* "Graphene Oxide:Single Walled Carbon Nanotube Based Interfacial Layer for All-solution-processed Multijunction Solar Cells in Both Regular and Inverted Geometries" *Advanced Energy Materials*, **2012**, 2, 299-303 (Featured on frontispiece)

44. Jiayan Luo, Hee Dong Jang, Tao Sun, Li Xiao, Zhen He, Alexandros P. Katsoulidis, Mercouri G. Kanatzidis, J. Murray Gibson, and Jiaxing Huang* "Compression and Aggregation-resistant Particles of Crumpled Soft Sheets" *ACS Nano*, **2011**, 5, 8943-8949 (cover article, featured in *Nature*, *C&EN*, *Materials Today* and *Chemistry & Industry*)

45. Jaemyung Kim, Vincent C. Tung and Jiaxing Huang* "Water Processable Graphene Oxide:Single Walled Carbon Nanotube Composite as Anode Modifier for Polymer Solar Cells" *Advanced Energy Materials*, **2011**, 1, 1052-1057 (Featured on frontispiece)

46. Ken C. Pradel, Kwon Nam Sohn and Jiaxing Huang* "Cross-flow Purification of Nanowires" *Angewandte Chemie International Edition*, **2011**, 50, 3412-3416 (Named a "hot paper", featured on frontispiece, and in *ChemViews Magazine*)

47. Andrei Kolmakov,* Dmitriy A. Dikin, Laura J. Cote, Jiaxing Huang, Majid Kazemian Abyaneh, Matteo Amati, Luca Gregoratti, Sebastian Günther and Maya Kiskinova "Graphene Oxide Windows for In-situ Environmental Cell Photoelectron Spectroscopy" *Nature Nanotechnology,* **2011**, 6, 651-657 (Featured in *Nature Nanotechnology* – News and Views)

48. Tae Hee Han, Yi-Kai Huang, Alvin T. L. Tan, Vinayak P. Dravid* and Jiaxing Huang* "Steam Etched Porous Graphene Oxide Network for Chemical Sensing" *Journal of the American Chemical Society,* **2011**, 133, 15264-15267 (Selected for *JACS* and *Analytical Chemistry* virtual issue on "Nanomaterials in Analytical Chemistry")

49. Vincent C. Tung, Jaemyung Kim, Laura J. Cote, and Jiaxing Huang* "Sticky Interconnect for Solution-Processed Tandem Solar Cells" *Journal of the American Chemical Society*, **2011**, 133, 9262-9265 (Featured in *Nanowerk.com* – Spotlight)

50. Vincent C. Tung, Jen-Hsien Huang, Ian Tevis, Franklin Kim, Jaemyung Kim, Chih-Wei Chu, Samuel I. Stupp, and Jiaxing Huang* "Surfactant-free Water-processable Photoconductive All-carbon Composite" *Journal of the American Chemical Society*, **2011**, 133, 4940-4947 (Featured in *C&EN*, *Renewables International*, and *Fast Company*)

51. Laura J. Cote, Jaemyung Kim, Vincent C. Tung, Jiayan Luo, Franklin Kim, and Jiaxing Huang* "Graphene Oxide as Surfactant Sheets" *Pure and Applied Chemistry,* **2011**, 83, 96-110 (Cover article, invited Perspective for IUPAC special issue commemorating IYC 2011. Chinese translation published in *Industrial Materials* (工業材料雜誌) by ITRI, Taiwan)

52. Jiayan Luo, Laura J. Cote, Vincent C. Tung, Alvin T. L. Tan, Philip E. Goins, Jinsong Wu and Jiaxing Huang* "Graphene Oxide Nanocolloids" *Journal of the American Chemical Society,* **2010**, 132, 17667-17669 (Featured in *Materials Today*)

53. Laura J. Cote, Jaemyung Kim, Zhen Zhang, Cheng Sun* and Jiaxing Huang* "Tunable Assembly of Graphene Oxide Surfactant Sheets: Wrinkles, Overlaps and Impacts on Thin Film Properties" *Soft Matter*, **2010**, 6, 6096-6101 (Featured on inside cover)

54. Hee Dong Jang*, Hankwon Chang, Kuk Cho, Franklin Kim, Kwonnam Sohn and Jiaxing Huang* "Co-assembly of Nanoparticles in Evaporating Aerosol Droplets: Preparation of Nanoporous Pt/TiO_2 Composite Particles" *Aerosol Science & Technology*, **2010,** 44, 1140-1145

55. Franklin Kim, Jiayan Luo, Rodolfo Cruz-Silva, Laura J. Cote, Kwonnam Sohn and Jiaxing Huang* "Self-Propagating Domino-Like Reactions in Oxidized Graphite" *Advanced Functional Materials*, **2010**, 20, 2867-2873 (Featured on frontispiece and in *C&EN*, *Materials Views*, *Chemistry & Industry*. Became the subject of a Research Highlight article in *Journal of Materials Chemistry*)

56. Jaemyung Kim, Franklin Kim, Laura J. Cote, Wa Yuan, Kenneth R. Shull and Jiaxing Huang* "Graphene Oxide Sheets at Interfaces" *Journal of the American Chemical Society,* **2010**, 132, 8180-8186 (Featured in *Nature Chemistry*, *Ars Technica*)

57. Jaemyung Kim, Franklin Kim and Jiaxing Huang* "Seeing Graphene-Based Sheets" *Materials Today*, **2010**, 13, 28-38 (Invited Review, cover article, a top 25 Hot Article)

58. Franklin Kim, Laura J. Cote and Jiaxing Huang* "Graphene Oxide: Surface Activity and Two Dimensional Assembly" *Advanced Materials*, **2010**, 22, 1954-1958 (invited Research News article)

59. Jaemyung Kim, Laura J. Cote, Franklin Kim and Jiaxing Huang* "Visualizing Graphene Based Sheets by Fluorescence Quenching Microscopy" *Journal of the American Chemical Society*, **2010**, 132, 260-267 (Featured in *Nature Chemistry*, *C&EN*, *Photonics.com*)

60. Yongsheng Zhao, Peng Zan, Jaemyung Kim, Cheng Sun and Jiaxing Huang* "Patterned Growth of Vertical Organic Nanowire Waveguide Arrays" *ACS Nano*, **2010**, 4, 1630-1636

61. Yongsheng Zhao, Jinsong Wu and Jiaxing Huang* "Vertical Organic Nanowire Arrays: Controlled Synthesis and Chemical Sensors" *Journal of the American Chemical Society*, **2009**, 131, 3158-3159

62. Kwon Nam Sohn, Franklin Kim, Ken Pradel, Jinsong Wu, Yong Peng, Feimeng Zhou and Jiaxing Huang* "Construction of Evolutionary Tree for Morphological Engineering of Nanoparticles" *ACS Nano*, **2009**, 3, 2191-2198 (Featured in *Nature Nanotechnology*, *Nanowerk.com*)

63. Laura J. Cote, Rodolfo Cruz-Silva and Jiaxing Huang* "Flash Reduction and Patterning of Graphite Oxide and Its Polymer Composite" *Journal of the American Chemical Society*, **2009**, 131, 11027-11032 (Featured in *C&EN* and again its 2009 end of year review, *Physics World*, *Current Science*, *The Engineer*)

64. Laura J. Cote, Franklin Kim and Jiaxing Huang* "Langmuir-Blodgett Assembly of Graphite Oxide Single Layers" *Journal of the American Chemical Society*, **2009**, 131, 1043-2049 (cover article, featured in *C&EN* twice)

65. Franklin Kim, Kwon Nam Sohn, Jinsong Wu and Jiaxing Huang* "Chemical Synthesis of Au Nanowires in Acidic Solutions" *Journal of the American Chemical Society*, **2008**, 130, 14442-14443

66. Shabnam Virji, Bruce H. Weiller, Jiaxing Huang*, Heather Shepherd, Phil Haussmann, Tanya Faltens, Richard Blair, Sarah Tolbert* and Richard B. Kaner* "Construction of a Polyaniline Nanofiber Gas Sensor" *Journal of Chemical Education*, **2008**, 158, 1102-1104

Selected Publications Prior to Northwestern

Postdoctoral research: Dewetting instability and patterning of nanostructures

1. Ruoxue Yan, Peter Pausauskie, Jiaxing Huang and Peidong Yang "Direct Photonic-Plasmonic Coupling and Routing in Single Nanowires" *Proceedings of the National Academy of Sciences*, **2009**, 106, 21045-21050

2. Jiaxing Huang, Rong Fan, Stephen Connor and Peidong Yang "One Step Patterning of Aligned Nanowire Arrays by Programmed Dip Coating" *Angewandte Chemie International Edition*, **2007**, 119, 2466-2469

3. Jiaxing Huang, Andrea R. Tao, Stephen Connor and Peidong Yang "A General Method for Assembling Single Colloidal Particle Lines", *Nano Letters*, **2006**, 6, 524-529

4. Jiaxing Huang, Franklin Kim, Andrea R. Tao, Stephen Connor and Peidong Yang "Spontaneous Formation of Nanoparticle Stripe Patterns via Dewetting" *Nature Materials*, **2005**, 4, 896-900

Graduate research: Conducting polymer nanostructures

5. Jiaxing Huang* "Syntheses and Applications of Conducting Polymer Polyaniline Nanofibers" *Pure and Applied Chemistry*, **2006**, 78, 15-27 (invited Review)

6. Jiaxing Huang and Richard B. Kaner "The Intrinsic Nanofiber Morphology of Polyaniline" *Chemical Communications*, **2006**, (4), 367-376 (invited Feature Article, cover article)

7. Ricky J. Tseng, Jiaxing Huang, Jianyong Ouyang, Jun He, Richard B. Kaner and Yang Yang "Polyaniline Nanofiber/Gold Nanoparticle Non-Volatile Memory" *Nano Letters*, **2005**, 5, 1077-1080

8. Jiaxing Huang and Richard B. Kaner "Flash Welding of Conducting Polymer Nanofibers" *Nature Materials*, **2004**, 3, 783-786

9. Jiaxing Huang and Richard B. Kaner "Nanofiber Formation in the Chemical Polymerization of Aniline: A Mechanistic Study" *Angewandte Chemie International Edition*, **2004**, 43, 5941-5945

10. Jiaxing Huang and Richard B. Kaner "A General Chemical Route to Polyaniline Nanofibers" *Journal of the American Chemical Society*, **2004**, 126, 851-855

11. Jiaxing Huang, Shabnam Virji, Bruce H. Weiller and Richard B. Kaner "Nanostructured Polyaniline Sensors" *Chemistry-A European Journal*, **2004**, 10, 1314-1319 (invited Concept Article)

12. Shabnam Virji, Jiaxing Huang, Richard B. Kaner and Bruce H. Weiller "Polyaniline Nanofibers as Gas Sensors: Response to Classes of Vapors and Comparison to Thin Films" *Nano Letters*, **2004**, 4, 491-496

13. Jiaxing Huang, Shabnam Virji, Bruce H. Weiller and Richard B. Kaner "Polyaniline Nanofibers: Facile Synthesis and Chemical Sensors" *Journal of the American Chemical Society*, **2003**, 125, 314-315

14. Jiaxing Huang, Veronica M. Egan, Hailan Guo, Jeong-Yeol Yoon, Alejandro L. Briseno, Iris E. Rauda, Robin L. Garrell, Charles M. Knobler, Feimeng Zhou and Richard B. Kaner "Enantioselective

Discrimination of D- and L-Phenylalanine by Chiral Polyaniline Films" *Advanced Materials*, **2003**, 15, 1158-1161

Undergraduate research: Synthesis of inorganic nanoparticles

15. Jiaxing Huang, Yi Xie, Bin Li, Yu Liu, Yitai Qian and Shuyuan Zhang "In-Situ Source–Template–Interface Reaction Route to Semiconductor CdS Submicrometer Hollow Spheres" *Advanced Materials*, **2000**, 12, 808-811
16. Bin Li, Yi Xie, Jiaxing Huang, Yu Liu and Yitai Qian "Sonochemical Synthesis of Nanocrystalline Copper Tellurides Cu_7Te_4 and Cu_4Te_3 at Room Temperature" *Chemistry of Materials*, **2000**,12, 2614-2616
17. Yi Xie, Jiaxing Huang, Bin Li, Yu Liu and Yitai Qian "A Novel Peanut-like Nanostructure of II-VI Semiconductor CdS and ZnS" *Advanced Materials*, **2000**, 12, 1523-1526
18. Bin Li, Yi Xie, Jiaxing Huang, Yitai Qian "Synthesis by Solvothermal Route and Characterization of $CuInSe_2$ Nano-whisker and Nanoparticle" *Advanced Materials*, **1999**, 11, 1456-1459

INVITED TALKS

Over 140 plenary, keynote and invited talks at conferences, workshops and academic, industry and government research institutes since 2013.

SELECTED LECTURES TO GENERAL AUDIENCE AND EDUCATIONAL OUTREACH ACTIVITIES

- "Wood or Plastics?"
  This lecture is based on an earlier course project assigned to students in my MSE 331, in which the audience is challenged to brainstorm to justify the choice of materials used to manufacture disposal utensils, debate the economics, manufacturing, sustainability, culture and consumer habits behind such material selection, and propose what could be done better.
- "Materials Innovations for Better Living"
  This lecture includes a few examples from my lab and my classroom to show how materials innovations inspired by ordinary people's experience provide solutions in health, beauty and arts for better living. It encourages the audience to define unique, experience-inspired research problems, which tend to well connect to the general public.
- "Learning Materials Science with Pencils and Paper"
  This lecture/workshop uses hands-on examples, aided by pencils and paper, to teach some basic material principles such as fracture and defects. It also explains some of the material discoveries made in my lab and classrooms.
- "Curiosity and Discoveries: Some Examples from My Classroom"
  This lecture module introduces innovative course projects done by students in my Northwestern courses, as well as those by students from elsewhere inspired by my previous guest lectures.
- Panelist for Preparing for Academic Careers in Engineering, Colleague of Engineering, University of Washington, WA, October 2013.
- Panelist and speaker for Women in Science and Engineering (WISE) Symposium, NSF-KAUST Research Conference, KAUST, Saudi Arabia, January 2017
- Tutorial instructors, Joint US Africa Materials Institute (JUAMI), Kampala, Uganda, December 2018

RESEARCH GROUP MEMBERS AND THEIR ACHIEVEMENTS

Former trainees (i.e. students and postdocs) in faculty positions (15):

- [Postdoc] Franklin Kim, Associate Professor, Shanghai Tech University (previously a faculty member at Kyoto University, Japan)
- [Postdoc] Yong Sheng Zhao, Professor, Institute of Chemistry, Chinese Academic of Science, China (NSF-C Outstanding Young Investigator awardee, Chemical Communication Lectureship)
- [Postdoc] Rodolfo Cruz-Silva, Associate Professor, Shinshu University, Japan
- [Postdoc] Vincent Tung, Associate Professor, King Abdullah University for Science and Technology (KAUST), Saudi Arabia (previously a faculty member at UC Merced, USA)
- [Postdoc] Bo Hu, Professor, Xidian University, China
- [Postdoc] Tae Hee Han, Assistant Professor, Hanyang University, South Korea
- [Postdoc] Kalyan Raidongia, Assistant Professor, Indian Institute of Technology, Guwahati, India
- [Postdoc] Ying Tao, Associate Professor, Tianjin University, China
- [Postdoc] Victor Hugo R. de Souza, Associate Professor, Federal University of Grande Dourado (UFGD), Brazil
- [Postdoc] Yu-Cong Jiao, Professor, Donghua University, China
- [Postdoc] Yige Zhou, Professor, Hunan University, China
- [PhD student] Jiayan Luo, 1000 talent Professor, Tianjin University, China (Electrochemical Society Nanocarbons Young Investigator awardee)
- [Visiting PhD student] Jiao-Jing Shao, Professor, Guizhou University, China
- [Visiting PhD student] Xiao-Jiao Zhu, Associate Professor, Anhui University, China
- [Visiting PhD student] Sahin Coskun, Assistant Professor, Osmangazi University, Eskişehir, Turkey

Former PhD students in industry (8):

- [PhD student] Laura Cote, Senior Material and Process Engineer, Continental
- [PhD student] Kwon Nam Sohn, Senior Manager, LG Chem
- [PhD student] Jaemyung Kim, Materials Scientist, Merck.
- [PhD student] Alexander Smith, Senior Reliability Engineer, Apple
- [PhD student] Deepti Krishnan, Process Engineer, Intel
- [PhD student] Andrew Koltonow, Cardinal Intellectual Property
- [PhD student] Lily Mao, Process Engineer, Intel
- [PhD student] Xuan Dou, Financial industry

Former MS trainees (6):

- [B.S./M.S student] Alvin T.L. Tan, PhD student at MIT
  Thesis title: Imaging 2D Sheets by Fluorescence Quenching Microscopy (2012)
- [B.S./M.S student], Ken Pradel, PhD student at Georgia Institute of Technology
  Thesis title: Cross-flow Purification of Nanowires (2011)
- [MS student] Hao Wei, PhD student, UT Austin
  Research topic: Carbon based multifunctional coatings (2016)
- [MS student] Lingye Zhou
  Research topic: Light Absorption of Graphene-based sheets (2017)
- [MS student] James Chou
  Research topic: Conductive adhesives (2017)
- [MS student] Wendy Tsai, Applied Materials
  Research topic: Cut and paste of graphene oxide architectures (2017)

Significant external awards received by students based on their work in the group

- NSF-KAUST DIY Electronics Innovation Contest (2017)
- ECS Nanocarbons Division SES Young Investigator Award 2016 (For Dr. Jiayan Luo, based partially on his thesis work in the group)

- Carbon Journal Prize for Outstanding PhD Thesis in Carbon Research (2 awards in 2014) (typically 1 award per year, an exception was made in 2014 to give 2 awards)
- Josephine de Karman Fellowship (<8 awards per year to PhD candidates in any discipline in North America)
- P.E.O. Scholar Awards (recognizes outstanding female PhD candidates in North America)
- MRS Graduate Student Awards (2 Gold and 2 Silver awards)
- 1000 Plan Program for Young Talents, China
- Chinese Government Award for Outstanding Self-Financed Students Abroad
- Taiwanese Ministry of Education's Scholarship for Studying Abroad
- NSF East Asia and Pacific Summer Institutes (EAPSI) Fellowship
- NSF Graduate Fellowship (4 awards+1 honorable mention)
- NSF Engineering Innovation Fellowship
- NDSEG Fellowship
- Forbes 30 Under 30
- Clean Energy Trust Consumer Favorite Prize
- Illinois Technology Foundation Fifty For The Future Award
- Phi Beta Kappa

SELECTED HIGHLIGHTS ON TEACHING ACTIVITIES

- Northwestern Engineering students awarded for class project (news release in 2017)
  - Two students in MSE-337 won the NSF-KAUST DIY Electronics Innovation Challenge Award and were invited to KAUST to present their projects "PolySketch", a conducting polymer based writing device, to the attendees and middle school students.
  - It includes observations and comments from conference chairs and attendees, including Profs. Mark Lundstrom (Purdue), Muhammad Hussain and Boon Ooi (KAUST).
- MSE-337 video report "Polyaniline Touch Gloves" cited in *Journal of Chemical Education* (2017)
  - Dr. Nedal Y. Abu-Thabit at Jubail Industrial College in Saudi Arabia reported a student project of polyaniline coated touch gloves based on one of the MSE-337 DIY projects.
- An interview on MRS news website (Materials 360) about MSE-337 and the innovative student projects (2014)
  - It described some of the products from student project and included guest commentary on such teaching activities.
- Pencil drawn strain gauges and chemiresistors on paper (2014)
  - MSE-337 students and TA published a paper based on results started in their class project.
  - Tech Take Live program on Fox News used over 8 min to talk about this work, with the title "Ordinary, back-to-school supplies become threat detectors"
  - C&E News – Chemistry in Picture: Handwriting
  - Materials Views: Drawing chemical sensors on paper with a flexible toy pencil
  - htxt.africa: Paper and pencils used to create chemical vapour detection system
- MSE-337 project mentioned in *Journal of Chemical Education* (2007)