

CURRICULUM VITAE

Lei Zhai

NanoScience Technology Center
Department of Chemistry
University of Central Florida

<http://www.nanoscience.ucf.edu/faculty/zhai.php>

Phone: (407)882-2847

Fax: (407)882-2819

e-mail: lzhai@ucf.edu

PROFESSIONAL EXPERIENCE

Director	NanoScience Technology Center University of Central Florida	2018-present
Interim Director	NanoScience Technology Center University of Central Florida	2017- 2018
Professor	NanoScience Technology Center and the Department of Chemistry University of Central Florida	2017- present
Associate Professor	NanoScience Technology Center and the Department of Chemistry University of Central Florida	2010- 2017
Assistant Professor	NanoScience Technology Center and the Department of Chemistry University of Central Florida	2005-2010
Postdoctoral Fellow	Department of Materials Science & Engineering Massachusetts Institute of Technology	2003-2005

EDUCATION

Ph.D. (Chemistry)	Carnegie Mellon University, Pittsburgh, PA	2002
M.S. (Chemistry)	East Tennessee State University Johnson City, TN	1998
B.S. (Chemical Engineering)	East China University of Science and Technology Shanghai, China	1993

RESEARCH INTERESTS

- Polymer Composites for Energy Conversion and Storage
- Functional Polymer Coatings
- Surface Science and Engineering
- Polymer-Derived Ceramics
- Polyelectrolyte Multilayer Films and Nanoparticles
- Functional Electrospun Fibers
- Conjugated Polymer Supramolecular Structures

TEACHING

- CHS 1440: General Chemistry for Engineering Major
- CHM 2205: Introduction to Organic and Biochemistry
- CHM1320L: Analytical Lab
- CHM 3212L: Organic Lab
- CHM2045C: General Chemistry I
- CHM2046C: General Chemistry II
- EMA 6319: Colloid and Interface Engineering
- IDS 6250: Introduction to Nanoscience and Technology
- IDS 6254: Nanofabrication and Characterization
- IDS 6255: Nanotechnology for Energy and Sustainability
- ISC 3930: Chemical and Life Science Nanotechnology

AWARDS

University of Central Florida Scroll & Quill Society
UCF Chapter of the National Academy of Inventors
University of Central Florida Research Incentive Award (2010, 2015)
University of Central Florida Teaching Incentive Program Award (2015)
Outstanding Chemist Award, American Chemical Society (ACS) Orlando Section (2013)
Scialog Fellow (Research Corporation for Science Advancement) (2011)
NSF CAREER Award (2008)

AFFILIATIONS

American Chemical Society
Materials Research Society
American Ceramic Society
American Association for the Advancement of Science

PUBLICATIONS (H index = 58, citation > 20000, according to Google Scholar)

1. Busch, S.J.; Craig, C. A.; Wayles, J.; Sailor-Tynes, T.; Dark, E.; Sweat, L. H.; Fox, D.W.; **Zhai, L.**; Walters, L. J. "Contribution of Stormwater Outfalls to Microplastic Pollution in a Subtropical Estuary Using Data Collected with the Assistance of Citizen Scientists" *Environments*, **2023**, *10*, 181.
2. Ramirez-Ubillus, M. A.; Wang, A.; Zou, S.; Chumbimuni-Torres, K. Y.; **Zhai, L.** "Morphological Effect on the Surface Activity and Hydrogen Evolution Catalytic Performance of Cu₂O and Cu₂O/rGO Composites" *J. Compos. Sci.* **2023**, *7*, 403.
3. Rahmani, A.; Sultanov, M. A.; Kamiru-White, K.; Shultz-Johnson, L. R.; Butkus, B. E.; Xie, S.; Liu, F.; Nguyen, D.T.; Wilson-Faubert, N.; Nazemi, A.; Banerjee, P.; **Zhai, L.**; Delferro, M.; Wen, J.; Jurca, T. "Ultrathin Atomic Layer Deposited Al₂O₃ Overcoat Stabilizes Al₂O₃-Pt/Ni-Foam Hydrogenation Catalysts" *ACS Appl. Mater. Interfaces* **2023**, *15*, 43756.
4. Sip, Y. Y. L.; Jacobs, A.; Morales, A.; Sun, M.; Roberson, L. B.; Hummerick, M. E.; Roy, H.; Kik, P.; **Zhai, L.** "Slippery Lubricant-Infused Silica Nanoparticulate Film Processing for Anti-Biofouling Applications" *Journal of Applied Biomaterials & Functional Materials*, **2023**, *21*, 22808000231184688.
5. Didier, C. M.; Fox, D.; Pollard, K. J.; Baksh, A.; Lyer, N. R.; Bosak, A.; Sip, Y. Y. L.; Orrico, J. F.; Kundu, A.; Ashton, R. S.; **Zhai, L.**; Moore, M. J.; Rajaraman, S. "Fully Integrated 3D Microelectrode Arrays with Polydopamine-Mediated Silicon Dioxide Insulation for Electrophysiological Interrogation of a Novel 3D Human, Neural Microphysiological Construct" *ACS Appl. Mater. Interfaces*, **2023**, *15*, 31.
6. Cencillo-Abad, P.; Mastranzo-Ortega, P.; Appavoo, D.; Guo, T.; **Zhai, L.**; Sanchez-Mondragon, J.; Chanda, D. "Reusable Structural Colored Nanostructure for Powerless Temperature and Humidity Sensing" *Adv. Opt. Mat.* **2023**, *5*, 2300300.
7. Nierenberg, D.; Flores, O.; Fox, D. W.; Sip, Y. Y. L.; Finn, C. M.; Ghazlan, H.; Cox, A.; Coathup, M.; McKinsty, K. K.; **Zhai, L.**; Khaled, A. R. "Macromolecules Absorbed from Influenza Infection-Based Sera Modulate the Cellular Uptake of Polymeric Nanoparticles" *Biomimetics*, **2022**, *7*, 219.
8. Fox, D. W.; Antony, D.-X.; Sip, Y. Y. L.; Fnu, J.; Rahmani, A.; **Zhai, L.** "Electrospun Hydrogel Fibers Guide HKUST-1 Assembly" *Materials Today Communication* **2022**, *33*, 104535.
9. Walters, L. J.; Graig, C. A.; Dark, E.; Wayles, J.; Encomio, V.; Coldren, G.; Sailor-Tynes, T.; Fox, D. W.; **Zhai, L.** "Quantifying Spatial and Temporal Trends of Microplastic Pollution in Surface Water and in the Eastern Oyster *Crassostrea Virginica* for a Dynamic Florida Estuary" *Environments*, **2022**, *9*, 131.

10. Burnstine-Townley, A.; Afrin, S.; Sip, Y. Y. L.; Fox, D. W.; **Zhai, L.** “In Situ Formation of Nanoparticles on Carbon Nanofiber Surface Using Ceramic Intercalating Agents” *Journal of Composites Science*, **2022**, *6*, 303.
11. Stoll, S.; Hwang, J. –H.; Fox, D. W.; Kim, K.; **Zhai, L.** Lee, W. H. “Cost-Effective Screen-Printed Carbon Electrode Biosensors For Rapid Detection of Microcystin-LR in Surface Waters for Early Warning of Harmful Algal Blooms” *Environmental Science and Pollution Research*, **2022**, *1*.
12. Fahad, S.; Zhang, Z.; **Zhai, L.**; Kushima, A. “A Liquid-Metal Electrocatalyst as a Self-Healing Anchor to Suppress Polysulfide Shuttling in Lithium-Sulfur Batteries” *Batteries & Supercaps*, **2022**, *6*, e202100395.
13. Shar, A.; Aboutalebianaraki, N.; Misiti, K.; Sip, Y. Y. L.; **Zhai, L.**; Razavi, M. “A Novel Ultrasound-Mediated Nanodroplet-Based Gene Delivery System for Osteoporosis Treatment” *Nanomedicine: Nanotechnology, Biology and Medicine*, **2022**, *41*, 102530.
14. Azim, N.; Orrico, J. F. Appavoo, D.; **Zhai, L.**; Rajaraman, S. “Polydopamine Surface Functionalization of 3D Printed Resin Material for Enhanced Polystyrene Adhesion towards Insulation Layers for 3D Microelectrode Arrays (3D MEAs)” *RSC Advances*, **2022**, *12*, 25605.
15. Craig, C. A.; Fox, D. W.; **Zhai, L.**; Walter, L. J. “In-situ Microplastic Egestion Efficiency of the Eastern Oyster *Crassostrea Virginica*” *Marine Pollution Bulletin*, **2022**, *173*, 113653.
16. Fahad, S.; Zhang, Z.; Zhai, L.; Kushima, A. “A Liquid-Metal Electrocatalyst as a Self-Healing Anchor to Suppress Polysulfide Shuttling in Lithium-Sulfur Batteries” *Batteries & Supercaps*, **2022**, e202100395.
17. Hwang, J.-H.; Sip, Y. Y. L.; Kim, K. T.; Hang, G.; Rodriguez, K. L.; Fox, D. W.; Afrin, S.; Burnstine-Townley, A.; **Zhai, L.**; Lee, W. H. “Nanoparticle-embedded Hydrogel Synthesized Electrodes for Electrochemical Oxidation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS)” *Chemosphere*, **2022**, *296*, 134001.
18. Olimattel, K.; **Zhai, L.**; Sadmani, A. H. M. A. “Enhanced Removal of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid via Polyelectrolyte Functionalized Ultrafiltration Membrane: Effects of Membrane Modification and Water Matrix” *Journal of Hazardous Materials Letters*, **2021**, *2*, 100043.
19. Hwang, J.-H.; Fox, D.; Stanberry, J.; Anagnostopoulos, V.; **Zhai, L.**; Lee, W. H. “Direct Mercury Detection in Landfill Leachate Using a Novel AuNP-Biopolymer Carbon Screen –Printed Electrode Sensor” *Micromachines*, **2021**, *12*, 649.
20. Saran, R.; Fox, D.; **Zhai, L.**; Chanda, D. “Organic Non-Wettable Superhydrophobic Fullerite Films” *Adv. Mater.* **2021**, 2102108.
21. Sip, Y. Y. L.; Fox, D.; Shultz, L.; Davy, M.; Chung, H.-S.; Antony, D.-X.; Jung, Y.; Jurca, T.; **Zhai, L.** “Cu-Ag Alloy Nanoparticles in Hydrogel Nanofibers for the Catalytic Reduction of Organic Compounds” *ACS App. Nano Mat.*, **2021**, *4*, 6045.
22. Fox, D. W.; Schropp, A. A; Joseph, T; Azim, N.; Sip, Y.Y. L.; **Zhai, L.** “Uniform Deposition of Silver Nanowires and Graphene Oxide by Superhydrophilicity for Transparent Conductive Films” *ACS App. Nano Mat.*, **2021**, *4*, 7628.
23. Esfahania, A. R.; **Zhai, L.**; Sadmani, A. A. H. M. “Removing Heavy Metals from Landfill Leachate using Electrospun Polyelectrolyte Fiber Mat-Laminated Ultrafiltration Membrane” *Journal of Environmental Chemical Engineering*, **2021**, *9*, 105355.
24. Zhang, Z.; Calderon, J.; Fahad, S.; Ju, L.; Antony, D.-X.; Yang, Y.; Kushima, A.; **Zhai, L.** “Polymer-Derived Ceramic Nanoparticle/Edge-Functionalized Graphene Oxide Composites for Lithium-Ion Storage” *ACS Appl. Mater. Interfaces*, **2021**, *13*, 9794.
25. Nierenberg, D.; Flores, O.; Fox, D.; Li Sip, Y. Y.; Finn, C.; Ghozlan, H.; Cox, A.; McKinstry, K.; **Zhai, L.**; Khaled, A. “Polymeric Nanoparticles with a Sera-Derived Coating for Efficient Cancer Cell Uptake and Killing” *ACS Omega*, **2021**, *6*, 5591.
26. Tian, H.; Li, Z.; Feng, G.; Yang, Z.; Fox, D.; Wang, M.; Zhou, H.; **Zhai, L.**; Kushima, A.; Du, Y.; Feng, Z.; Shan, X.; Yang, Y. “Stable, High-performance, Dendrite-free, Seawater-based Aqueous Batteries” *Nature Comm.*, **2021**, *12*, 237.

27. Barrios, E.; **Zhai, L.** “A Review of the Evolution of the Nanostructure of SiCN and SiOC Polymer Derived Ceramics and the Impact on Mechanical Properties” *Molecular Systems Design & Engineering*, **2020**, *5*, 1606-1641
28. Olimattel, K.; Church, J.; Lee, W. H.; Chumbimuni-Torres, K.; **Zhai, L.**; Sadmani, A. H. M. “Enhanced Fouling Resistance and Antimicrobial Property of Ultrafiltration Membranes via Polyelectrolyte-Assisted Silver Phosphate Nanoparticle Immobilization” *Membranes*, **2020**, *10*, 293.
29. Cherusseri, J.; Pandey, D.; Sambath, K. K.; Thomas, J.; **Zhai, L.** “Flexible Supercapacitor Electrodes Using Metal-Organic Frameworks” *Nanoscale*, **2020**, *12*, 17649.
30. Appavoo, D.; Park, S. Y.; **Zhai, L.** “Responsive Polymers for Medical Diagnostics” *J. Mater. Chem. B*, **2020**, *8*, 6217.
31. Carlin, J.; Graig, C.; Little, S.; Donnelly, M.; Fox, D.; **Zhai, L.**; Walters, L. “Microplastic Accumulation in the Gastrointestinal Tracts in Birds of Prey in Central Florida, USA” *Environmental Pollution*, **2020**, *264*, 114633.
32. Esfahania, A. R., Zhang, Z.; Sip, Y. Y. L.; **Zhai, L.**; Sadmani, A. A. H. M. “Removal of Heavy Metals from Water Using Electrospun Polyelectrolyte Complex Fiber Mats” *Journal of Water Process Engineering*, **2020**, *37*, 101438.
33. Afrin, S.; Fox, D.; **Zhai, L.** “Organic Superhydrophobic Coatings with Mechanical and Chemical Robustness” *MRS Communications*, **2020**, *10*, 346.
34. Catarata, R.; Azim, N.; Bhattacharya, S.; **Zhai, L.** “Controlled Drug Release from Polyelectrolyte-Drug Conjugate Nanoparticles” *J. Mater. Chem. B*, **2020**, *8*, 2887.
35. **Zhai, L.**; Narkar, A.; Ahn, K. “Self-Healing Polymers with Nanomaterials and Nanostructures” *Nano Today*, **2020**, *30*, 100826.
36. OkogbueSang, E.; Han, S. S.; Ko, T.-J.; Chung, H. -S.; Ma, J.; Shawkat, M. S.; Kim, J. H.; Kim, J. H.; Ji, E.; Oh, K. H.; **Zhai, L.**; Lee, G.-H.; Jung, Y. “Multifunctional Two-Dimensional PtSe₂-Layer Kirigami Conductors with 2000% Stretchability and Metallic-to-Semiconducting Tunability” *Nano Lett.* **2019**, *19*, 7598.
37. Barrios, E.; Fox, D.; Li Sip, Y.; Catarata, R.; Calderon, J. E.; Azim, N.; Afrin, S.; Zhang, Z.; **Zhai, L.** “Nanomaterials in Advance, High-Performance Aerogel Composites: A Review” *Polymers*, **2019**, *11*, 726.
38. Azim, N.; Kundu, A.; Royse, M.; Li Sip, Y. Y.; Young, M.; Santra, S.; **Zhai, L.**; Rajaraman, S. “Fabrication and Characterization of a 3D Printed, MicroElectrodes Platform with Functionalized Electrospun Nano-scaffolds and Spin Coated 3D Insulation Towards Multi-Functional Biosystems” *Journal of Microelectromechanical Systems*, **2019**, *28*, 606.
39. Diaz, A. M.; Zhang, Z.; Lee, B.; Hernandez Luna, F. M.; Li Sip, Y. Y.; Lu, X.; Heidings, J.; Tetard L.; **Zhai, L.**; Kang, H.; “Evaluation of Single Hydrogel Nanofiber Mechanics Using Persistence Length Analysis” *ACS Omega*, **2018**, *3*, 18304.
40. Han, J.; Li, Q.; Wang, J.; Ye, J.; Fu, G.; **Zhai, L.**; Zhu, Y. “Heteroatoms (O, N)-Doped Porous Carbon Derived from Bamboo Shoots Shells for High Performance Supercapacitors” *J. Mater. Sci.: Mater. Elec.*, **2018**, *29*, 20991.
41. Pal, T.; Joung, D.; Ghosh, S.; Chunder, A.; **Zhai, L.**; Khondaker, S. “High Photoresponsivity and Light-Induced Carrier Conversion in RGO/TSCuPc Hybrid Phototransistors” *J. Mater. Res.* **2018**, *33*, 3999.
42. Islam, M. A.; Kim, J. H.; Ko, T.-J.; Noh, C.; Nehate, S.; Kaium, M. G.; Ko, M.; Fox, D.; **Zhai, L.**; Cho, C.-H.; Sundaram, K. B.; Bae, T.-S.; Jung, Y.; Chung, H.-S.; Jung, Y. “Three Dimensionally-Ordered 2D MoS₂ Vertical Layers Integrated on Flexible Substrates with Stretch-Tunable Functionality and Improved Sensing Capability” *Nanoscale*, **2018**, *10*, 17525.
43. Okogbue, E.; Kim, J. H.; Ko, T.-J.; Chung, H.-S.; Krishnaprasad, A.; Calderon, J. F.; Nehate, S.; Kaium, M. G.; Park, J. B.; Lee, S.-J.; Sundaram, K. B.; **Zhai, L.**; Roy, T.; Jung, Y. “Centimeter-Scale Periodically Corrugated Few Layer 2D MoS₂ with Tensile Stretch-Driven Tunable Multifunctionalities” *ACS Appl. Mater. Interfaces* **2018**, *10*, 30623.

44. Dev, D.; Krishnaprasad, A.; Kalita, H.; Das, S.; Rodriguez, V.; Calderon, J.; **Zhai, L.**; Roy, T. "High Quality Gate Dielectric/MoS₂ Interfaces Probed by the Conductance Method" *App. Phys. Lett.* **2018**, *112*, 232101.
45. Shen, C.; Chai, S.; Zou, S.; **Zhai, L.** "Crystallization of Poly(3-hexylthiophene) on Graphitic Surfaces with Different Curvatures" *Polymer* **2018**, *44*, 168.
46. Shen, C.; Barrios, E.; **Zhai, L.** "Bulk Polymer-Derived Ceramic Composites of Graphene Oxide" *ACS Omega*, **2018**, *3*, 4006.
47. Choudhary, N.; Islam, M. A.; Kim, J. H.; Ko, T. J.; Schropp, A.; Hurtado, L.; Weitzmen, D.; **Zhai, L.**; Jung, Y. "Two-Dimensional Transition Metal Dichalcogenide Hybrid Materials for Energy Applications" *Nano Today*, **2018**, *19*, 16.
48. Fu, G.; Li, Q.; Ye, J.; Han, J.; Wang, J.; **Zhai, L.**; Zhu, Y. "Hierarchical Porous Carbon with High Nitrogen Content Derived from Plant Waste (Pomelo Peel) for Supercapacitor" *J. Mater. Sci.: Mater. Elec.* **2018**, *29*, 7707.
49. Lu, X.; Shen, C.; Zhang, Z.; Barrios, E.; **Zhai, L.** "Core-Shell Composite Fibers for High-Performance Flexible Supercapacitor Electrodes" *ACS Appl. Mater. Interfaces* **2018**, *10*, 4041.
50. Shen, C.; Calderon, J. E.; Barrios, E.; Solimana, M.; Khater, A.; Jeyaranjana, A.; Tetard, L.; Gordon, A.; Seal, S.; **Zhai, L.** "Anisotropic Electrical Conductivity in Polymer Derived Ceramics Induced by Graphene Aerogels" *J. Mater. Chem. C* **2017**, *5*, 11708.
51. Safaei, A.; Chandra, S.; Vázquez-Guardado, A.; Calderon, J.; Franklin, D.; Tetard, L.; **Zhai, L.**; Leuenberger, M. N.; Chanda, D. "Dynamically Tunable Extraordinary Light Absorption in Monolayer Graphene" *Phys. Rev. B* **2017**, *96*, 165431.
52. Talias, S.; Lunsford, S.; **Zhai, L.** "Simultaneous Detection of Lead and Cadmium Using a Silver Nanoparticle Polymer Carbon Nanotube Composite Modified Electrode" *The Chemical Educator* **2017**, *22*, 187.
53. Choudhary, N.; Li, C.; Moore, J.; Nagaiah, N.; **Zhai, L.**; Jung, Y.; Thomas, J. "Asymmetric Supercapacitor Electrodes and Devices" *Adv. Mater.* **2017**, *29*, 1605336.
54. Shen, C.; Barrios, E.; McInnis, M.; Zuyus, J.; **Zhai, L.** "Fabrication of Graphene Aerogels with Heavily Loaded Metallic Nanoparticles" *Micromachines* **2017**, *8*, 47.
55. Guo, L.; Liang, K.; Marcus, K.; Li, Zhao; Zhou, L.; Mani, P. D.; Chen, H.; Shen, C.; Dong, Y.; **Zhai, L.**; Coffey, K. R.; Orlovskaya, N.; Sohn, Y.-H.; Yang, Y. "Enhanced Photoelectrocatalytic Reduction of Oxygen Using Au@TiO₂ Plasmonic Film" *ACS Appl. Mater. Interfaces* **2016**, *8*, 34970.
56. Malhotra, A.; Bera, T.; **Zhai, L.** "Bioinspired Metal Ion Coordinated Polyelectrolyte Fibrous Nanoreactors" *Adv. Mater. Interfaces* **2016**, *3*, 160092.
57. Church, J.; Wang, X.; Calderon, J.; Lee, W. H.; Cho, H. J.; **Zhai, L.** "A Graphene-Based Nanosensor for In Situ Monitoring of Polycyclic Aromatic Hydrocarbons (PAHs)" *J. Nanosci. Nanotech.* **2016**, *16*, 1620.
58. Spradlin, C.; Sullivan, M.; Dodson, D.; **Zhai, L.**; Lunsford, S. "An Experience with P3HT Modified CNT Working Electrode to Detect Lead by Square Wave Anodic Stripping Voltammetry" *Chem. Educator*, **2015**, *20*, 256.
59. Yu, Z.; Moore, J.; Calderon, J.; **Zhai, L.**; Thomas, J. "Coil-Type Asymmetric Supercapacitor Electrical Cables" *Small*, **2015**, 5289.
60. **Zhai, L.**; Thomas, J.; Khondaker, S.; McInnis, M.; Shen, C. "Ordered Conjugated Polymer Nano- and Microstructures: Structure Control for Improved Performance of Organic Electronics" *Nano Today*, **2015**, *11*, 705.
61. Yu, Z.; Tetard, L.; **Zhai, L.**; Thomas, J. "Supercapacitor Electrode Materials: Nanostructures from 0 to 3 Dimensions" *Energy & Environmental Science*, **2015**, *8*, 702.
62. Yu, Z.; McInnis, M.; Calderon, J.; Seal, S.; **Zhai, L.**; Thomas, J. "Functionalized Graphene Aerogel Composites for High-Performance Asymmetric Supercapacitors" *Nano Energy*, **2015**, *11*, 611.
63. An, D.; Ji, Y.; Chiu, A.; Lu, Y.; Song, W.; **Zhai, L.**; Qi, L.; Luo, D.; Ma, M. "Developing Robust, Hydrogel-based, Nanofiber-Enabled Encapsulation Devices (NEEDs) for Cell Therapies" *Biomaterials*, **2015**, *37*, 40.

64. Chantharasupawng, P.; Christenson, C.; Philip, R.; Tetard, L.; **Zhai, L.**; Winiarz, J.; Yamamoto, M.; Nari, R. R.; Thomas, J. "Photorefractive Performances of a Graphene-doped PATPD/7-DCST/ECZ Composite" *J. Mater. Chem. C.*, **2014**, *2*, 7639.
65. Liu, J.; Moo-Young, J.; McInnis, M.; Pasquinelli, M. A.; **Zhai L.**; "Conjugated Polymer Assemblies on Carbon Nanotubes" *Macromolecules*, **2014**, *47*, 705.
66. **Zhai, L.** "Stimuli-Responsive Polymer Films" *Chem. Soc. Rev.* **2013**, *42*, 7148.
67. Hu, Z.; Liu, J.; Simon-Bower, L.; **Zhai, L.**; Gesquiere, A. J. "Influence of Backbone Rigidity on Single Chain Conformation of Thiophene-Based Conjugated Polymers" *J. Phys. Chem. B*, **2013**, *117*, 4461.
68. Li, Q.; Chen, Y.; Luo, L.; Wang, L.; Yu, Y.; **Zhai, L.** "Photoluminescence and Wetting Behavior of ZnO Nanoparticles/Nanorods Array Synthesized by Thermal Evaporation" *Journal of Alloys and Compounds*, **2013**, *560*, 156.
69. Anderson, J. M.; McInnis, M. D.; Malhotra, A.; **Zhai, L.** "Aqueous Route for the Synthesis of Platinum, Ruthenium and Ceria Nanoparticles on Multi-walled Carbon Nanotubes for the Electrooxidation of Methanol and Ethanol" *Mater. Express*, **2013**, *3*, 11.
70. Das, S.; Singh, S.; Singh, V.; Joung, D.; Dowding, J. M.; Reid, D.; Anderson, J.; **Zhai, L.**; Khondaker, S. I.; Self, W. T.; Sudipta, S. "Oxygenated Functional Group Density on Graphene Oxide: Its Effect on Cell Toxicity" *Particle & Particle Systems Characterization*, **2013**, *30*, 148.
71. Tran, B.; Oladeji, I. O.; Zou, J.; Chai, G.; **Zhai, L.** "Adhesive Poly(PEGMA-co-MMA-co-IBVE) Copolymer Electrolyte" *Solid State Ionics* **2013**, *232*, 37-43.
72. Tran, B.; Oladeji, I. O.; Wang, Z.; Calderon, J.; Chai, G.; Atherton, D.; **Zhai, L.** "Adhesive PEG-based Binder for Aqueous Fabrication of Thick Li₄Ti₅O₁₂ Electrode" *Electrochim. Acta* **2013**, *88*, 536-542.
73. Tran, B.; Oladeji, I. O.; Wang, Z.; Calderon, J.; Chai, G.; Atherton, D.; **Zhai, L.** "Thick LiCoO₂/Nickel Foam Cathode Prepared by an Adhesive and Water-Soluble PEG-Based Copolymer Binder" *J. Electrochem. Soc.* **2012**, *159*, A1928.
74. Arif, M.; Liu, J.; **Zhai, L.**; Khondaker, S. I. "Temperature Dependent Charge Transport in Poly(3-hexylthiophene)-block-Polystyrene Copolymer Field-Effect Transistor" *Syn. Met.* **2012**, *162*, 1531.
75. McInnis, M.; **Zhai, L.** "Conjugated Polymer/Carbon Nanotube Composite" *Reviews in Nanoscience and Nanotechnology*, **2012**, *1*, 119.
76. Li, Q.; J. M. Anderson, Chen, Y.; **Zhai, L.** "Structural Evolution of Multi-walled Carbon Nanotube/MnO₂ Composites as Supercapacitor Electrodes" *Electrochim. Acta*, **2012**, *59*, 548.
77. Sarkar, S.; Gan, Z.; An, L.; **Zhai, L.** "Structural Evolution of Polymer-Derived Amorphous SiBCN Ceramics at High Temperature" *J. Phys. Chem. C* **2011**, *115*, 24993.
78. Chen, H.; Chunder, A.; Liu, X.; Haque, F.; Zou, J.; Austin, L.; Knowles, G.; **Zhai, L.**; Huo, Q. "A Multifunctional Gold Nanoparticle/Polyelectrolyte Fibrous Nanocomposite Prepared from Electrospinning Process" *Mater. Express*, **2011**, *1*, 154.
79. Shabani, R.; Massi, L.; **Zhai, L.**; Seal, S.; Cho, H. J. "Classroom Modules for Nanotechnology Undergraduate Education: Development, Implementation, and Evaluation" *Eup. J. Eng. Edu.* **2011**, *36*, 199.
80. Singh, V.; Joung, D.; **Zhai, L.**; Das, S.; Khondaker, S. I.; Seal, S. "Graphene Based Materials: Past, Present and Future" *Prog. Mater. Sci.* **2011**, *56*, 1178. (Most Cited Progress in Materials Science Articles since 2010)
81. Sarkar, S.; **Zhai, L.** "Polymer-Derived Non-Oxide Ceramics Fibers- Past, Present and Future" *Mater. Exp.* **2011**, *1*, 18.
82. Zou, J.; Tran, B.; **Zhai, L.** "Fabrication of Metal Nanoparticles on Highly Dispersed Pristine Carbon Nanotubes" *International Journal of Smart and Nano Materials*, **2011**, *2*, 92.
83. Liu, J.; Mikhailov, I.; Zou, J.; Osaka, I.; Masunov, A. E.; McCullough, R. D.; **Zhai, L.** "Insight into How Molecular Structures of Thiophene-based Conjugated Polymers Affect Crystallization Behaviors" *Polymer*, **2011**, *52*, 2302.

84. Joung, D.; **Zhai, L.** Khondaker, S. K. “Coulomb Blockade and Hopping Conduction in Graphene Quantum Dots Array” *Phys. Rev. B.* **2011**, *83*, 115323.
85. Sarker, B. K.; Liu, J.; **Zhai, L.**; Khondaker, S. I. “Fabrication of Organic Field Effect Transistor by Directly Grown Poly(3-hexylthiophene) Crystalline Nanowires on Carbon Nanotube Aligned Array Electrode” *ACS Appl. Mater. Interfaces* **2011**, *3*, 1180.
86. Li, Q.; Liu, J.; Zou, J.; Chunder, A.; Chen, Y.; **Zhai, L.** “Synthesis and Electrochemical Performance of Multi-walled Carbon Nanotube/Polyaniline/MnO₂ Ternary Coaxial Nanostructures for Supercapacitors” *J. Power Sources* **2011**, *196*, 565.
87. Taftil, E. Y.; Londe, G.; Chunder, A; **Zhai, L.**; Kumar, R.; Cho, H. J. “Wettability Control and Flow Regulation Using a Nanostructure-Embedded Surface” *J. Nanosci. Nanotechnol.* **2011**, *11*, 1417.
88. Zou, J.; Liu, J.; Karakoti, A.; Kumar, A.; Joung, D.; Li, Q.; Khondaker, I. S.; Seal, S.; **Zhai, L.** “Ultra-light Multi-walled Carbon Nanotube Aerogel” *ACS Nano* **2010**, *4*, 7293.
89. Hu, Z.; Liu, J.; Gesquiere, A.; **Zhai, L.** “Single Molecule Spectroscopy and Atomic Force Microscopy Morphology Studies on a Diblock Copolymer Consisting of Poly (3-hexylthiophene) and Fullerene” *Macromol. Chem. Phys.* **2010**, *211*, 2416.
90. Joung, D.; Chunder, A.; **Zhai, L.**; Khondaker, S. I. “Space Charge Limited Conduction with Exponential Trap Distribution in Reduced Graphene Oxide Sheet” *Appl. Phys. Lett.* **2010**, *97*, 093105.
91. Chunder, A.; Pal, T.; Khondaker, S. I.; **Zhai, L.** “Reduced Graphene Oxide/Copper Phthalocyanine Composite and Its Optoelectrical Properties” *J. Phys. Chem. C.* **2010**, *114*, 15129.
92. Arif, M.; Liu, J.; **Zhai, L.**; Khondaker, S. I. “Poly(3-hexylthiophene) Crystalline Nanoribbon Network for Organic Field Effect Transistors” *Appl. Phys. Lett.* **2010**, *96*, 243304.
93. Ghosh, S.; Sarker, B. K.; Chunder, A.; **Zhai, L.**; Khondaker, S. I. “Position Dependent Photodetector from Large Area Reduced Graphene Oxide Thin Films” *Appl. Phys. Lett.* **2010**, *96*, 162109.
94. Sarkar, S.; Zou, J.; Liu, J.; Xu, C.; An, L.; **Zhai, L.** “Polymer-Derived Ceramic Composite Fibers with Aligned Pristine Multiwalled Carbon Nanotubes” *ACS Appl. Mater. Interfaces* **2010**, *2*, 1150.
95. Joung, D.; Chunder, A.; **Zhai, L.**; Khondaker, S. I. “High Yield Fabrication of Chemically Reduced Graphene Oxide Field Effect Transistors by Dielectrophoresis” *Nanotechnology*, **2010**, *16*, 165202.
96. Sharma, R.; Karakoti, A.; Seal, S.; **Zhai, L.** “MWCNT-PSS Supported Polypyrrol/Manganese Oxide Nano-Composite for High Performance Electrochemical Electrodes” *J. Power Sources* **2010**, *195*, 1256.
97. Chunder, A.; Liu, J.; **Zhai, L.** “Reduced Graphene Oxide/Poly(3-hexylthiophene) Supramolecular Composites” *Macromol. Rapid Commun.* **2010**, *31*, 380.
98. Liu, J.; Arif, M.; Zou, J.; Khondaker, S. I.; **Zhai, L.** “Controlling Poly(3-hexylthiophene) Crystal Dimension: Nanowhiskers and Nanoribbons” *Macromolecules*, **2009**, *42*, 9390.
99. Zou, J.; Tran, B.; Huo, Q.; **Zhai, L.** “Transparent Carbon Nanotube/Poly (3, 4-ethylenedioxythiophene) Composite Electrical Conductors” *Soft Materials* **2009**, *7*, 355.
100. Sharma, R.; **Zhai, L.** “Multiwall Carbon Nanotube Supported Poly(3,4-ethylenedioxythiophene)/Manganese Oxide Nanocomposite Electrode for Supercapacitors” *Electrochim. Acta* **2009**, *54*, 7148.
101. Dai, Q.; Li, Y.; **Zhai, L.**; Sun, W. “3, 4-Ethylenedioxythiophene (EDOT)-Based π -Conjugated Oligomers: Facile Synthesis and Excited-state Properties” *J. Photochem. Photobio. A: Chem.* **2009**, *206*, 164.
102. Liu, J.; Zou, J.; **Zhai, L.** “Bottom-up Assembly of Poly(3-hexylthiophene) on Carbon Nanotubes: 2D Building Blocks for Nanoscale Circuits” (Cover Featured) *Macromol. Rapid Commun.* **2009**, *30*, 1387.
103. Dhir, V.; Natarajan, A.; Stanceescu, M.; Chunder, A.; Bhargava, N.; Das, M.; **Zhai, L.**; Molnar, P. “Patterning of Diverse Mammalian Cell Types in Serum Free Medium with Photoablation” *Biotechnol. Prog.* **2009**, *25*, 594.

104. Londe, G.; Chunder, A.; **Zhai, L.**; Cho, H. J. “An Analytical Model for the Wettability Switching Characteristic of a Nanostructured Thermoresponsive Surface” *Appl. Phys. Lett.* **2009**, *94*, 164104.
105. Chunder, A.; Etcheverry, K.; Wadsworth, S.; Boreman, G. D.; **Zhai, L.** “Fabrication of Antireflection Coatings on Plastics Using the Spraying Layer-by-layer Self-assembly Technique” *Journal of the Society for Information Display (invited)*, **2009**, *17*, 389.
106. Scolari, L.; Gauza, S.; Xianyu, H.; **Zhai, L.**; Eskildsen, L.; Akleskhold, T. T.; Wu, S. –S.; Bjarklev, A. “Frequency Tunability of Solid-Core Photonic Crystal Fibers Filled with Nanoparticle-Doped Liquid Crystals” *Opt. Exp.* **2009**, *17*, 3754.
107. Stokes, P.; Liu, L.; Zou, J.; **Zhai, L.**; Huo, Q.; Khondaker, S. I. “Photoresponse in Large Area Multi-walled Carbon Nanotube/Polymer Nanocomposite Films” *Appl. Phys. Lett.* **2009**, *94*, 042110.
108. Zou, J.; Khondaker, S. I.; Huo, Q.; **Zhai, L.** “A General Strategy to Disperse and Functionalize Carbon Nanotubes Using Conjugated Block Copolymers” *Adv. Funct. Mater.* **2009**, *19*, 479.
109. Chunder, A.; Etcheverry, K.; Londe, G.; Cho, H. J.; **Zhai, L.** “Conformal Switchable Superhydrophobic/Hydrophilic Surfaces for Microscale Flow Control” *Colloids Surf., A*, **2009**, *333*, 187.
110. Zou, J.; Chen, H.; Chunder, A.; Yu, Y.; Huo, Q.; **Zhai, L.** “Preparation of Superhydrophobic and Conductive Nanocomposite Coating from a Carbon Nanotube-Conjugated Block Copolymer Dispersion” *Adv. Mater.* **2008**, *20*, 3337.
111. Sarkar, S.; Chunder, A.; Fei, W.; An, L.; **Zhai, L.** “Superhydrophobic Mats of Polymer Derived Ceramics” *J. Am. Ceram. Soc.* **2008**, *91*, 2751.
112. Zou, J.; Liu, L.; Chen, H.; Khondaker, S. I.; McCullough, R. D.; Huo, Q.; **Zhai, L.** “Dispersion of Pristine Carbon Nanotubes Using Conjugated Block Copolymers” *Adv. Mater.* **2008**, *20*, 2055.
113. Londe, G.; Chunder, A.; Wesser, A.; **Zhai, L.**; Cho, H. J. “Microfluidic Valves Based on Superhydrophobic Nanostructures and Switchable Thermosensitive Surface for Lab-on-a-chip (LOC) Systems” *Sens. Actuators, B* **2008**, *132*, 431.
114. Chang, N. –B.; Wanielista, M.; Hossain, F.; **Zhai, L.**; Lin, K. –S. “Integrating Nanoscale Zero-valent Iron and Titanium Dioxide for Nutrient Removal in Stormwater Systems” *NANO* **2008**, *3*, 297.
115. Zhang, L.; Wang, Y.; Wei, Y.; Xu, W.; Fang, D.; **Zhai, L.**; Lin, K.-C.; An, L. “A Silicon Carbonitride Ceramic with Anomalously High Piezoresistivity” *J. Am. Ceram. Soc.* **2008**, *91*, 1346.
116. Chen, H.; Muthuraman, H.; Stokes, P.; Zou, J.; Liu, X.; Wang, J.; Huo, Q.; Khondaker, S. I.; **Zhai, L.** “Dispersion of Carbon Nanotubes and Polymer Nanocomposite Fabrication Using Trifluoroacetic Acid as a Co-solvent” *Nanotechnology* **2007**, *18*, 415606.
117. Chunder, A.; Sarkar, S.; Yu, Y.; **Zhai, L.** “Fabrication of Ultrathin Polyelectrolyte Fibers and Their Controlled Release Properties” *Colloids Surf., B* **2007**, *58*, 172.
118. Bravo, J.; **Zhai, L.**; Wu, Z.; Cohen, R. E.; Rubner, M. F. “Transparent Superhydrophobic Films Based on Silica Nanoparticles” *Langmuir* **2007**, *23*, 7293.
119. Ma, M.; Gupta, M.; Li, Z.; **Zhai, L.**; Gleason, K. K.; Cohen, R. E.; Rubner, M. F.; Rutledge, G. C. “Decorating Electrospun Fibers for Superhydrophobicity” *Adv. Mater.* **2007**, *19*, 255.
120. Wu, Z.; Walsh, J.; Nolte, A.; **Zhai, L.**; Cohen, R. E.; Rubner, M. F. “Deformable Antireflection Coatings from Polymer and Nanoparticle Multilayers” *Adv. Mater.* **2006**, *18*, 2699.
121. **Zhai, L.**; Berg, M. C.; Cebeci, F. Ç.; Kim, Y.; Milwid, J. M. Cohen, R. E.; Rubner, M. F. “Patterned Superhydrophobic Surface: Toward a Synthetic Mimic of the Namib Desert Beetle” *Nano Lett.* **2006**, *6*, 1213.
122. Cebeci, F. Ç.; Wu, Z.; **Zhai, L.**; Cohen, R. E.; Rubner, M. F. “Nanoporosity-Driven Superhydrophilicity: A Means to Create Multifunctional Antifogging Coatings” *Langmuir* **2006**, *22*, 2856.
123. Berg, M. C.; **Zhai, L.**; Cohen, R. E.; Rubner, M. F. “Controlled Drug Release from Porous Polyelectrolyte Multilayers” *Biomacromolecules* **2006**, *7*, 357.
124. Ewbank, P. C.; Loewe, R. S.; **Zhai, L.**; Reddinger, J.; Sauve, G.; McCullough, R. D. “Regioregular Poly(thiophene-3-alkanoic acid)s: Watersoluble Conducting Polymers Suitable of Chromatic Chemosensing in Solution and Solid State” *Tetrahedron* **2004**, *40*, 11269.

125. **Zhai, L.**; Cebeci, F. Ç.; Cohen, R. E.; Rubner, M. F. “Stable Superhydrophobic Coatings from Polyelectrolyte Multilayers” *Nano Lett.* **2004**, 7, 1349.
126. **Zhai, L.**; Nolte, A. J.; Rubner, M. F.; Cohen, R. E. “pH-gated Nanoporous Transitions of Polyelectrolyte Multilayers in Confined Geometries and Their Application as Tunable Bragg Reflectors” *Macromolecules* **2004**, 37, 6113.
127. **Zhai, L.**; McCullough, R. D. “Regioregular Polythiophene / Gold Nanoparticle Hybrid Materials” *J. Mater. Chem.* **2004**, 14, 141.
128. **Zhai, L.**; Laird, D. W.; McCullough, R. D. “Soft-lithography Patterning of Functionalized Regioregular Polythiophenes” *Langmuir* **2003**, 19, 6492.
129. **Zhai, L.**; Pilston, R. L.; Zaiger, K. L.; Stokes, K. K.; McCullough, R. D. “Synthesis of Poly(3-(6-bromohexyl)thiophene) by Grignard Metathesis, and its Post-polymerization Functionalization” *Macromolecules* **2003**, 36, 61.
130. **Zhai, L.**; McCullough, R. D. “Layer-by-layer Assembly of Polythiophene” *Adv. Mater.* **2002**, 14, 901.
131. Loewe, R. S.; Eubank, P.; Liu, J.; **Zhai, L.**; McCullough, R. D. “Regioregular, Head-to-tail Poly(3-alkylthiophenes) Made Easily by the GRIM Method: Investigation of the Reaction and the Origin of Regio-selectivity” *Macromolecules* **2001**, 34, 4324.
132. **Zhai, L.**; Zhou, X.; Liu, R. “A Theoretical Study of Pyrolysis Mechanisms of Pyrrole” *J. Phys. Chem. A* **1999** 103, 3917.
133. Liu, R.; Zhou, X.; **Zhai, L.** “Theoretical Investigation of Unimolecular Decomposition Channels of Furan” *J. Comput. Chem.* **1998**, 19, 240.

PATENTS

1. **Zhai, L.**; Malhotra, A. “Dust and Moisture Resistant Coating Compositions, Methods and Related Coated Articles” US 10,316,217 (2019)
2. **Zhai, L.**; Zou, J. “Method of Forming Carbon Nanotube or Graphene-Based Aerogels” US 9,963,570 B2 (2018)
3. Haynie, D. T.; **Zhai, L.** “Polypeptide Electrospun Nanofibrils of Defined Composition” US9,869,038 B2 (2018)
4. Haynie, D. T.; **Zhai, L.** “Polypeptide Electrospun Nanofibrils of Defined Composition” US 9,428,849 B2, (2016)
5. **Zhai, L.**; Zou, J.; “Carbon Nanotube or Graphene-Based Aerogels” US 08,975,326 (2015)
6. Huo, Q.; Khondaker, S.; Zou, J.; **Zhai, L.**; Chen, H.; Muthuraman, H. “Polymer Composites Having Highly Dispersed Carbon Nanotubes” US 08,709,292 (2014)
7. **Zhai, L.**; Liu, J.; Zou, J.; Chunder, A. “Method of Forming Composite Materials including Conjugated Materials Attached to Carbon Nanotubes or Graphene” US 08,790,610 B2 (2014)
8. **Zhai, L.**; Liu, J.; Zou, J.; Chunder, A. “Supramolecular Structures Comprising at Least Partially Conjugated Polymers Attached to Carbon Nanotubes or Graphenes” US 08,613,898 (2011)
9. Zou, J.; **Zhai, L.**; Huo, Q. “Dispersions of Carbon Nanotubes in Copolymer Solutions and Functional Composite Materials and Coatings Therefrom” US 08,211,969 (2009)
10. Huo, Q.; Khondaker, S.; Zou, J.; **Zhai, L.**; Chen, H.; Muthuraman, H. “Polymer Composites Having Highly Dispersed Carbon Nanotubes and Methods for Forming Same” US 07,951,850 (2009)
11. Sheng, X.; **Zhai, L.**; Rubner, M. F.; Cohen, R. E. “Patterned Coatings Having Extreme Wetting Properties and Methods of Making” US 08,153,233 (2007)

BOOK CHAPTERS

1. Malhotra, A.; McInnis, M.; Anderson, J.; **Zhai, L.** “Stimuli Responsive Conjugated Polymers: From Electronic Noses to Artificial Muscles.” In “Intelligent Stimuli-Responsive Materials: From Well-Defined Nanostructures to Applications”; Ed. Li, Q. John Wiley & Sons 2013.

2. **Zhai, L.** “Layer-by-Layer Self-Assembled Multilayer Stimuli-Responsive Polymeric Films” in “Handbook of Stimuli Responsive Materials” Ed. Urban, M. John-Wiley 2011.
3. Zou, J.; Liu, J.; Tran, B.; Huo, Q.; **Zhai, L.** “Modification of Nanotubes with Conjugated Block Copolymers” in “Surface Modification of Nanotube Fillers” Ed. Mittal, V. John-Wiley 2011.
4. Zou, J.; Liu, J.; **Zhai, L.** “Dispersing and Functionalizing Carbon Nanotubes Using Conjugated Block Copolymers” in “Functional Polymer Nanocomposites for Energy Storage and Conversion” Ed. Wang, Q.; Zhu, L. ACS Symposium Proceeding 2010.

CONFERENCE PROCEEDINGS

1. **Zhai, L.** “Conductive Polymer/Manganese Oxide/Carbon Nanotube Composite Supercapacitor Electrodes” Polymer Preprints 2012, 53, 97.
2. Calderon, J. E.; **Zhai, L.** “Polymer Derived Ceramics (PDC) of Polyacrylonitrile/Oligasilazane Composite Nanofibers” PMSE Preprints, 2012.
3. Malhotra, A.; **Zhai, L.** “Polyelectrolyte Fibers Loaded with Metal Ions for Biomedical Applications” PMSE Preprints, 2012.
4. Khondaker, S.; **Zhai, L.** “Organic Field Effect Transistor Using Aligned Carbon Nanotube Array Electrode: Device Properties and Charge Injection Mechanism” PMSE Preprints, 2012.
5. Matthews, S.; Anderson, J.; **Zhai, L.** “Reduced Graphene Oxide Composites for Energy Generation and Storage” Preprints American Chemical Society, Division of Energy and Fuels, 2012, 57, 45.
6. Anderson, J.; Calderon, J.; McInnis, M.; Diaz, D.; Zhai, L. “Electrodeposition of Graphene and Pt/Ceria for Oxidation of Alcohols” Preprints American Chemical Society, Division of Energy and Fuels, 2012, 57, 82.
7. **Zhai, L.** “Insight into How Molecular Structures of Thiophene-based Conjugated Polymers Affect Crystallization Behaviors” Polymer Preprints 2011, 52, 960.
8. **Zhai, L.** “Conjugated Polymer Assemblies on Carbon Nanotubes” PMSE Preprints, 2011.
9. **Zhai, L.** “Conjugated polymer/Carbon Nanotube Composites for Energy Applications” Polymer Preprints 2010, 51, 692-693.
10. **Zhai, L.** “Conjugated Polymer/Carbon Nanotube Composites” PMSE Preprints, 2010.
11. Sarkar, S. ; Zou, J. ; Xu, C. ; Liu, J.; An, L. ; **Zhai, L.** “Polymer-Derived Ceramic Composite Fibers with Aligned Pristine Multiwalled Carbon Nanotubes” PMSE Preprint, 2010.
12. Liu, J.; Zou, J.; **Zhai, L.** “Poly(3-hexylthiophene)/carbon Nanotube Supramolecular Centipede” PMSE Preprints 2009, 100, 605.
13. Zou, J.; **Zhai, L.** “Platinum Nanoparticles Supported on Pristine Carbon Nanotubes for Anodic Oxidation of Methanol” PMSE Preprints 2009, 100, 547.
14. Chunder, A.; Etcheverry, K.; **Zhai, L.** “Invited Paper: Fabrication of Antireflection Coatings for Displays” Digest of Technical Papers - Society for Information Display International Symposium (2008), 39(BK. 1), 557-559.
15. Scolari, L.; Gauza, S.; Xianyu, Ha.; **Zhai, L.**; Eskildsen, L.; Alkeskjold, T. T. Wu, S.-T.; Bjarklev, A.; Cordeiro, C. M. B.; de Matos, C. J. S. “Nanoparticles Doped Liquid Crystal Filled Photonic Bandgap Fibers” AIP Conference Proceedings 2008, 1055, 29-32.
16. Fei, W.; Yang, Z.; **Zhai, L.**; Sohn, Y.; Cho K.; Klier E. “De-agglomeration Study and Slip Casting of Tungsten Nanopowders via Aqueous Colloidal Processing” The Proceedings of Tungsten, Refractory and Hard materials. 2008
17. Yang, Z.; Fei, W.; **Zhai, L.**; Sohn, Y.; Cho K.; Klier E. “Microscopic and Spectroscopic Characterization of Nano-Tungsten Powders” The Proceedings of Tungsten, Refractory and Hardmaterials. 2008*
18. Sarkar, S.; Tran, B.; Zhang, L.; An, L.; **Zhai, L.** “High Temperature Stable Silicon Borocarbonitride from Polyorganoborosilazane” PMSE Preprints 2008, 99, 551.
19. Zou, J.; Huo, Q.; **Zhai, L.** “Dispersion and Self-assembly of Carbon Nanotubes Using Conjugated Block Copolymers” PMSE Preprints 2008, 99, 204.

20. Sarkar, S.; Chunder, A.; Fei, W.; An, L.; **Zhai, L.** “Superhydrophobic Polymer Derived Ceramic Fibers” PMSE Preprints 2007, 97, 871.
21. Chunder, A.; Sarkar, S.; Yu, Y.; **Zhai, L.** “Controlled Release of Low Molecular Weight Cationic Molecules from Electrospun Weak Polyelectrolyte Fibers” PMSE Preprints 2007, 96, 622.
22. Li, Z.; Lee, D.; **Zhai, L.**; Rubner, M.F.; Cohen, R.E. “Tuning the Water Wetting of Fabrics Using Nanoparticle Multilayer Assembly” PMSE Preprints 2006, 95, 800.
23. Ma, M.; Li, Z.; **Zhai, L.**; Rubner, M. F.; Rutledge, G. C. “Superhydrophobic Fabrics by Decorating Electrospun Fibers” Polymer Preprints 2006, 47, 441.
24. Wu, Z.; Nolte, A.; Walish, J.; **Zhai, L.**; Rubner, M. F.; Cohen, R. E. “Layer-by-layer Assembled Nanoparticles on Flexible Substrates: Toward Deformable Antireflection Coatings” PMSE Preprints 2005, 93, 654.
25. **Zhai, L.**; Laird, D.D.; McCullough, R. D. “Regioregular Polythiophene for Integrated Circuits” PMSE Preprints 2002, 87, 288.
26. Liu, J.; Sheina, E.; **Zhai, L.**; Kowalewski, T.; McCullough, R. D. “Nanowires Formed from Block Copolymers of Regioregular Polythiophene” PMSE Preprints 2002, 86, 35.
27. Zaiger, K.; **Zhai, L.**; McCullough, R. D. “Carbohydrate Functionalized Polythiophenes as Biosensors” Polymer Preprints 2001, 42, 332.
28. **Zhai, L.**; McCullough, R. D. “Layer by Layer Self-assembly of Polythiophene” Polymer Preprints 2001, 42, 187.
29. **Zhai, L.**; McCullough, R. D. “Functionalization of Regioregular Head-to-Tail Poly(3-alkylthiophenes) Side Chain” Polymer Preprints 2000, 41, 1582.

INVITED TECHNICAL PRESENTATIONS

1. “Controlled Drug Delivery and Release Using Polyelectrolyte Nanostructures” Fall 2021 USF Health Taneja College of Pharmacy Graduate Programs Seminar series. October 27, 2021.
2. “In-situ Production of Metal Nanoparticles on Polymer Derived Ceramic Fibers for Catalysis and Sensing” The Minerals, Metals & Materials Society Virtual Conference, March 15-18, 2021.
3. “Composites of Polymer Derived Ceramics” Advanced Materials Lecture Series, November 26, 2020.
4. “Composites of Polymer Derived Ceramics” Kennedy Space Center Seminar Series, NASA, September 11, 2020.
5. “Electrospun Polyelectrolyte Fibers as Nanoreactors” 2019 ACS Southeastern Regional Meeting, Savannah, GA, October 20-23, 2019.
6. “Polymer Derived Ceramics with Graphene” International Conference on Material Science and Nanotechnology, Paris, France September 17-18, 2019.
7. “Polymer Derived Ceramics for Environmental Barrier Coatings” Advanced Coatings 2019, Houston, TX, May 2-3, 2019.
8. “Flexible Electronics: A New Opportunity for Chemistry” Chinese-American Chemical Society Meeting Keynote Speaker, Orlando, FL, April 1, 2019.
9. “Organic Solar Cells” 255th ACS National Meeting, New Orleans, LA, March 18-22, 2018.
10. “Polymer Derived Ceramics for Environmental Barrier Coatings” Advanced Coatings 2017, Houston, TX, April 10-11, 2017.
11. “Polyelectrolyte Fibers with Functional Nanostructures” Joint Symposium of Florida Chapter of the AVS Science and Technology Society and the Florida Society for Microscopy Orlando, FL, March 6, 2017.
12. “Bioinspired Polyelectrolyte Complexes with Metal Ions” International Symposium on Stimuli-Responsive Materials, Santa Rosa, CA, October 23-25, 2016
13. “Bioinspired Metal Ion Coordinated Polyelectrolyte Nanoreactors” Society of Engineering Science 53rd Annual Technical Meeting, University of Maryland, October 2-5, 2016
5. “Polymer-Derived Ceramic Composites with Graphene and Carbon Nanotubes” 40th International Conference and Exposition on Advanced Ceramics and Composites (ICACC 2016), Daytona Beach, FL, January 24-29, 2016.

6. "Carbon Nanotube and Graphene Composites with Conjugated Polymers" Department of Chemistry, University of Southern Florida, November 12th, 2015.
7. "Multifunctional Polyelectrolyte Complexes with Embedded Metal Ions" ACS Joint Southeastern/Southwest Regional Meeting, Memphis, TN, November 4-7, 2015.
8. "Metal Ion Incorporated Polyelectrolyte Complex Fibers for Tissue Engineering" 2nd Annual Conference & Exposition of the International Society of Biomedical Polymers and Polymeric Biomaterials (ISBPPB), Orlando, FL, July 8-10, 2015.
9. "Bioinspired Metal Coordinated Polyelectrolyte Nanofibers: from Improved Stability to Nanofabrication" ACS Florida Section Annual Meeting and Exposition, Clearwater, FL, May 5-7, 2015.
10. "Conjugated Polymer Composites of Carbon Nanotubes and Graphene" Anhui Normal University, June, 2014.
11. "Conjugated Polymer Composites of Carbon Nanotubes and Graphene" Nanjing, Agricultural University, June, 2014.
12. "Conjugated Polymer Composites of Carbon Nanotubes and Graphene" Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, June 2014.
13. "Hydrogen Sensors Based on Graphene Aerogels" 1st Space Initiative Conference, 2013, 11, 14
14. "Yes, I See. –Bringing Nanotechnology Education in Undergraduate Classrooms" 1st Sustainable Nanotechnology Organization Conference, Arlington, VA, 2012 November 4-6.
15. "Reduced Graphene Oxide Composites for Energy Generation and Storage" 244 ACS National Meeting, Philadelphia, PA, 2012, August 19-23.
16. "Conjugated Polymer Composites of Carbon Nanotubes and Graphene" 40th North American Thermal Analysis Society National Conference, Orlando, FL, August 12-15, 2012.
17. "Conjugated Polymer/Carbon Nanotube Composites" Department of Polymer Science and Engineering, University of Science and Technology of China, June 11th, 2012.
18. "Conjugated Polymers on Carbon Nanotubes and Graphene" Department of Chemistry, Carnegie Mellon University, April 13th, 2012.
19. "Conductive Polymer Composites" Department of Chemical Engineering, Virginia Tech. February 24th, 2012.
20. "Conjugated Polymer/Carbon Nanotube Composites" 27th Annual McKnight Fellows' Meeting and 15th Annual Graduate School Conference, Tampa, FL, 2011, October 21-23.
21. "Conjugated Polymer/Carbon Nanotube Composites" *Materials Today* spring virtual conference – Characterization, Technique and Analysis, Jun 15, 2011.
22. "Responsive Conjugated Polymer/Carbon Nanotube Composites" 6th International Symposium on Stimuli-Responsive Materials. Hattiesburg, MS, Oct 26-27, 2010.
23. "Conjugated Polymer/Carbon Nanotube Composites" WUC International Symposium on Energy Storage and Conversion 240 ACS National Meeting, Boston, MA, August 22-26, 2010.
24. "Controlling Poly(3-hexylthiophene) Supramolecular Structures: Nanowires and Nanoribbons" 239 ACS National Meeting, San Francisco, CA, March 21-25, 2010.
25. "Conjugated Polymer/Carbon Nanotube Composites for Energy Applications" 239 ACS National Meeting, San Francisco, CA, March 21-25, 2010.
26. "Conjugated Polymer/Carbon Nanotube Composites" University of Florida, Mar. 18th, 2010.
27. "Conjugated Polymer/Carbon Nanotube Composites" University of New Hampshire, Dec. 2nd, 2009.
28. "Polymer Derived Ceramics" Northwestern Polytechnical University, China, 2009.
29. "Polymer Composite for Transportation Parts" 238th ACS National Meeting, Washington D. C. August 17-22, 2009.
30. "Nanocomposites for Transportation: Workshop for High School Teachers" 238th ACS National Meeting, Washington D. C. August 17-22, 2009.
31. "Fabrication of Antireflection Coatings for Display" 2008 Society for Informational Display International Symposium, Seminar and Exhibition, Los Angeles, LA, May 13-18.
32. "Multifunctional Coatings from Nano Particles" Particles 2008, Orlando, FL.

33. "Multifunctional Coatings" PPG Industry, Pittsburgh, PA. 2007.
34. "pH-gated Porosity Transitions of Polyelectrolyte Multilayers" University of Connecticut, 2005.
35. "pH-gated Porosity Transitions of Polyelectrolyte Multilayers" University of Central Florida, 2005.
36. "pH-gated Porosity Transitions of Polyelectrolyte Multilayers" Northeastern University, 2005.
37. "pH-gated Porosity Transitions of Polyelectrolyte Multilayers" Iowa State University, 2004.

CONTRIBUTED TECHNICAL PRESENTATIONS

1. "Polymer-Derived Ceramic Composites of Graphene" 257th ACS Spring National Meeting in Orlando, FL, March 31 – April 4, 2019.
2. "Crystallization of Poly(3-hexylthiophene) on Graphitic Surfaces with Different Curvatures" 257th ACS Spring National Meeting in Orlando, FL, March 31 – April 4, 2019.
3. "Multifunctional Polyelectrolyte Fibers with Metal Ions" 255th ACS National Meeting, New Orleans, LA, March 18-22, 2018.
4. "Bioinspired Metal Ion Coordinated Polyelectrolyte Nanoreactors with Predictable Design Rules" 252nd ACS National Meeting & Exposition, Philadelphia, PA, 2016, August 21-25.
5. "Graphene/Polymer Derived Ceramics with Anisotropic Properties" 249th ACS National Meeting & Exposition, Denver, CO, 2015, March 22-26.
6. "Assemblies of Conjugated Polymers on Carbon Nanotubes" 249th ACS National Meeting & Exposition, Denver, CO, 2015, March 22-26.
7. "Crystallization of Conjugated Molecules from Graphitic Surfaces" 247th ACS National Meeting & Exposition, Dallas, TX, 2014, March 16-20.
8. "Conductive Polymer/Manganese Oxide/Carbon Nanotube Composite Supercapacitor Electrodes" 244 ACS National Meeting, Philadelphia, PA, 2012, August 19-23.
9. "Insight into How Molecular Structures of Thiophene-based Conjugated Polymers Affect Crystallization Behaviors" 242 ACS National Meeting, Denver, CO, 2011, August 28-September 1
10. "Conjugated Polymer Assemblies on Carbon Nanotubes" 242 ACS National Meeting Denver, CO, 2011, August 28-September 1
11. "Poly(3-hexylthiophene) Supramolecular Structures on Carbon Nanotubes" 237th ACS National Meeting, Salt Lake City, UT Mar. 22-26, 2009.
12. "Dispersion and Self-assembly of Carbon Nanotubes Using Conjugated Block Copolymers" 236th ACS National Meeting, Philadelphia, PA, Aug 17-21, 2008.
13. "Electrospun Polyelectrolyte Fibers" 234th ACS National Meeting, Boston, MA, Aug 19-23, 2007.
14. "Superhydrophobic Polymer Derived Ceramic Mats" 234th ACS National Meeting, Boston, MA, Aug 19-23, 2007.
15. "pH-gated Drug Releasing of Polyelectrolyte Nanofibers" MRS Fall Meeting, Boston, MA, 2006.
16. "Surface Patterns with Extreme Wetting Properties" 230th ACS National Meeting, Washington DC, Aug 27-Sep 1, 2005.
17. "pH-gated Porosity Transitions of Polyelectrolyte Multilayers" Iowa State University, 2004.
18. "pH-Gated Porosity Transitions of Polyelectrolyte Multilayers in Confined Geometries and Their Applications as Bragg Reflectors" 227th ACS National Meeting, Anaheim, CA, Mar 27-Apr 1, 2004.
19. "pH-gated Nanoporous Transitions of Polyelectrolyte Multilayers in Confined Geometries" MRS Fall Meeting, Boston, MA, 2003.
20. "Regioregular Polythiophene for Integrated Circuits." 224th ACS National Meeting, Boston, MA, August 18-22, 2002.
21. "Layer by Layer Self-Assembly of Polythiophene." 222nd ACS National Meeting, Chicago, IL, August 26-30, 2001.
22. "Functionalization of Regioregular Head-to-Tail Poly(3-alkylthiophenes) Side Chain." 220th ACS National Meeting, Washington, DC, August 20-24, 2000.
23. "Superhydrophobic Surface from Polyelectrolyte Multilayer Films." MRS Fall Meeting, Boston, MA, 2004.

SERVICES

- Associate Editor for *Materials*
- Editorial Advisory Board Member of *International Journal of Polymeric Materials and Polymeric Biomaterials*
- Organizing and chairing American Chemical Society (ACS) symposia
- Chair ACS Orlando Section (2013)
- Serving on Undergraduate Affairs Committee at the Department of Chemistry (2006), Construction Committee (2007, Chair), Instrument Committee (2008-), Affiliate Committee (2008-, Chair), Faculty Search Committee (2009-2012, 2015, 2016) at NanoScience Technology Center, Annual Evaluation Standard and Procedure Committee (2011), NSTC/AMPAC Committee (2011), MCF Staff Search Committee (2103), University Research Council (2011-, Chair of 2014), UCF Centers & Institutes RIA committee (Chair, 2017), UCF Centers & Institutes RIA committee (2017) UCF Centers & Institutes Ad Hoc Committee (2017), UCF Materials Characterization Facility (MCF) Sub-committee (2019-)
- Serving on student dissertation committees, as a judge for Undergraduate Research Showcase and Graduate Research Symposium at the University of Central Florida, and National Junior Science and Humanities Symposia.
- Coordinating Outreach Programs for NanoScience Technology Center
- Serving as a reviewer for scientific journals: Nature, Science, Nano Letters, Angewandte Chemie International Edition, Journal of American Chemical Society, ACS Nano, Langmuir, Accounts of Chemical Research, Biomacromolecules, Macromolecules, Advanced Materials, Small, Macromolecular Rapid Communications, Soft Matter, Polymer, Physical Chemistry Chemical Physics, Journal of Applied Polymer Science, Journal of Material Chemistry, Journal of Controlled Release, Journal of Nanoscience and Nanotechnology, Carbon, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Electrochemistry Communications, etc.
- Serving as a reviewer for National Science Foundation, Department of Energy (DOE), NASA, and ACS-PRF (Petroleum Research Fund), Romanian National Council for Scientific Research

STUDENTS' AWARDS

Binh Tran: First Place Award in UCF Undergraduate Research Poster Competition (2009)

Jean Calderon: McKnight's Dissertation Fellowship (2012)

Elizabeth Barrios: NASA Space Technology Research Fellow (2016-2020), McKnight's Dissertation Fellowship (2020), Luigi G. Napolitano Award (2020), 2021 IAF Young Space Leader

Yuenyee Li Sip: NASA Research Fellow (2020-2023)

ALUMINI

Postdoctoral Research Associates

Drs. Jianhua Zou, Jianhua Liu, Raj Sharma, Divambal Appavoo, Sohrab Mofid

Graduate Students (graduated time)

Vipra Dhir (M.S. 2010), Anindarupa Chunder (Ph.D. 2010), Sourangsu Sarkar (Ph.D. 2011), Jordan Anderson (Ph.D. 2012), Binh Tran (Ph.D. 2013), Astha Malhotra (Ph.D. 2015), Jean Calderon (Ph.D. 2015), Matthew McInnis (Ph.D. 2015), David Nash (Ph.D. 2017), Jacob Todd (Ph.D. 2017), Chen Shen (Ph.D. 2018), Xiaoyan Lu (Ph.D. 2018), Melissa Aiello (M.S. 2016), Yuenyee Li Sip (M.S. 2019), Ruginn Catarata (MS, 2019) Elizabeth Barrios (Ph.D. 2020), Nilab Azim (Ph.D. 2021), Sajia Afrin (Ph.D. 2021), Zeyang Zhang (Ph.D. 2022), David Fox (Ph.D. 2022) Alex Burnstine-Townley (Ph.D. 2023), Azina Rahmani (Ph.D. 2024).

Undergraduate Students

Kenneth Etcheverry, Andrew Wood, Scott Matthew, Bin Tran, Carl Irani, Hoa Van, Michael McCreight, Darnelle Ramirez, Peter Clauter, Vraj Patel, Steven Kobosko, Caleb Dunlap, Joe Zuyus, Natalie Joseph,

Zaid Mohammad, Zachary Magnusen, David Fox, Otniel Ulloa, Olivia McClellan, Edwinson Oriol, Christian Tajudeen, Dennis-Xavier Antony, Russell Cox, Trisha Joseph, Kristen Aviles, Nichika Holdrum, Adam Rozman, Austin Rahma (REU), Samuel Subbarao (REU), CiCi Chen (REU), Joyce Theisen (REU), Charles Hart (REU), Victoria Stefanelli (REU), Beth DiBiase (REU), Samuel Urena (REU), Madison Royse (REU), Felix Hernandez (REU), Alex Cushing (REU)

High School Students

Yinbo Yu, Ali Agha, Katie Frasier, Ryan DiMaria, Mark Maynard, John Li, Jeremy Zhang, Tavin Jiang, Nicholas Buoniconti, Aamma Dhillon, Jyoti Lodha, Ruchi Jahagirdar, Milton Zhang, Sabrina Mai, Angel Derose, Sophie Ewh.

High School Teachers

Jean McInnis (RET)

CURRENT RESEARCHERS

Graduate Students (expected graduating time)

Yuenyee Li Sip (2023), Azina Rahmani (2024), Hamid Maloudian (2024), Fnu Joshua (2025), Manuel Alejandro Ramirez Ubillus (2025), Ryan Trammell (2023), Quynh Le (2025)