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PROFESSIONAL HISTORY

The University of Akron – School of Polymer Science and Polymer Engineering

2021/6 – present	Professor
2018/6 – 2021/6	Associate Professor
2012/8 – 2018/6	Assistant Professor
2016/5 - present	Director, Akron Functional Materials Center
2023/7 -2024/8	Associate Director of School of Polymer Science and Polymer Engineering

Rice University - Department of Chemistry

2008-2012	Postdoctoral Research Associate Advisor: James M. Tour
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EDUCATION

Ph.D. in Chemistry, University of Cologne, Germany, 2007

Advisor: Bernd Tieke

“New Diketopyrrolopyrrole(DPP)-Based Conjugated Polymers Prepared upon Palladium Catalyzed Polymerization and Electropolymerization Reactions”

B.S. in Chemical Engineering, Nanjing University of Technology, China, 1997

AWARDS AND HONORS

Outstanding Research Award, University of Akron (2022)

Air-Force Summer Faculty Fellow (2020-2023)

Emerging Young Investigator (Journal of Material Chemistry A) 2017

National Science Foundation (NSF) CAREER award 2015

Beyond Lithium Ion VIII Conference, best poster, 2015

ACS PRF New Doctoral Investigator (DNI) award 2014

Outstanding Undergraduate Student, Nanjing University of Technology, 1997

PROFESIONAL SOCIETIES

American Chemical Society (ACS): Divisions of Energy and Fuel, Polymer Materials Science & Engineering, Polymer Chemistry,
The Electrochemical Society (ECS)
Materials Research Society (MRS)
American Physical Society (APS)

REFEREED PUBLICATIONS

(> 13000 citations, H-Index 53, *corresponding author)

Google Scholar link:

https://scholar.google.com/citations?hl=en&user=sScmG5wAAAAJ&view_op=list_works&sortby=pubdate

[82] Wei-Yao Tung, Cheng Pu, Yi-Fan Huang, Wei Xie, Chung-Fu Cheng, Yun-Yu Lai, Xiang Li, Heng-Yi Lin, Yhue-Ting Lai, Chien-Lung Wang, Yu Zhu* "Benzimidazolone-Dioxazine Pigments-Based Conjugated Polymers for Organic Field-Effect Transistor" *Macromolecular Rapid Communications*, 2023, 44 (1), 2200297(impact factor:5.734, citations=2)

[81] Christine Papadakis, Yu Zhu*, Fredrich Kremer "Synopsis: the 300th volume of colloid and polymer science" *Colloid and Polymer Science*, 2022, 300 (11), 1225-1227 881 (impact factor:2.52, citations=0)

[80] Wenfeng Liang, Yuhan Zhang, Run Yang, Yu Zhu* "A room-temperature ionic liquid-based superionic conductive polymer electrolyte with high thermal stability for long-cycle-life lithium batteries" *Colloid and Polymer Science*, 2022, 300 (11), 1281-1289(impact factor:2.52, citations=0)

[79] Xiang Li, Peiyuan Gao, Yun-Yu Lai, J. David Bazak, Aaron Hollas, Heng-Yi Lin, Vijayakumar Murugesan, Shuyuan Zhang, Chung-Fu Cheng, Wei-Yao Tung, Yueh-Ting Lai, Ruozhu Feng, Chien-Lung Wang, Wei Wang* and Yu Zhu* "Symmetry-breaking design of an organic iron complex catholyte for a long cyclability aqueous organic redox flow battery" *Nature Energy*, 2021, 6, 873–881 (impact factor:60.858, citations=50)

[78] Xuhui Xia, Chung-Fu Cheng, Yu Zhu* and Bryan D. Vogt* "Ultrafast microwave-assisted synthesis of highly nitrogen-doped ordered mesoporous carbon" *Microporous and Mesoporous Materials*, 2021, 310, 110639.(impact factor: 5.455, citations=4)

- [77] Tsung-Kai Yang, Jou-Tsen Ou, Heng-Yi Lin, Wei-Cheng Peng, Meng-Hsuan Jao, Jia Chen, Bin Sun, Yu Zhu and Chien-Lung Wang* "Adaptive molecular quaternary clips made with pyrene functionalized polyhedral oligomeric silsesquioxane" *Nanoscale Advances*, 2021, 3, 173-176. (impact factor: 4.553, citations=1)
- [76] Ke Pan, Feng Zou, Marcello Canova, Yu Zhu, Jung-Hyun Kim* "Comprehensive electrochemical impedance spectroscopy study of Si-Based anodes using distribution of relaxation times analysis" *Journal of Power Sources*, 2020, 479, 229083. (impact factor: 9.127, citations=1)
- [75] Feng Zou,, Kewei Liu, Chung-fu Cheng, Yijie Ji and Yu Zhu* "Metal-organic frameworks (MOFs) derived carbon-coated NiS nanoparticles anchored on graphene layers for high-performance Li-S cathode material" *Nanotechnology*, 2020, 31, 48. (impact factor: 3.874, citations=4)
- [74] Xue Liu, Sheng Liu, Liubov Yu. Antipina, Yibo Zhu, Jinliang Ning, Jinyu Liu, Chunlei Yue, Abin Joshy, Yu Zhu, Jianwei Sun, Ana M. Sanchez, Pavel B. Sorokin, Zhiqiang Mao, Qihua Xiong and Jiang Wei* "High yield production of ultrathin fibroid semiconducting nanowire of Ta₂Pd₃Se₈" *Nano Research* 2020, 13, 1627–1635(impact factor: 8.897, citations=4)
- [73] Haichang Zhang, Wei-Yao Tung, Xiang Li, Hailiang Jin, Ruonan Deng, Yu-Ming Chen, Yifan Mao and Yu Zhu* "Conjugated polymer with dynamic and thermoreversible hydrogen bonding on the backbone" *Polymer*, 203 (2020), 122787. (impact factor: 4.430, citations=5)
- [72] Yun-Yu Lai, Xiang Li, Kewei Liu, Wei-Yao Tung, Chung-Fu Cheng and Yu Zhu* "Stable Low-Cost Organic Dye Anolyte for Aqueous Organic Redox Flow Battery" *ACS Applied Energy Materials* 2020, 3, 2290–2295. (impact factor: 6.024, citations=11)
- [71] Yun Yu Lai, Xiang Li and Yu Zhu* "Polymeric Active Materials for Redox Flow Battery Application" *ACS Applied Polymer Materials*, 2020, 2, 2, 113-128 (invited for Young Investigators Forum in ACS Applied Polymer Materials, impact factor: 4.089, citations=28)
- [70] Kewei Liu, Yanfeng Xia, Chung-fu Cheng, Xuhui Xia, Feng Zou, Bryan D. Vogt* and Yu Zhu* "Microwave Processed, Onion-like Carbon and Fluoropolymer Passivated Lithium Metal Electrode for Enhanced Li Stripping/Plating Performance" *ACS Applied Energy Materials*, 2019, 2, 11, 7933-7941. (impact factor: 6.024, citations=1)

- [69] Prasad Raut, Si Li, Yu-Ming Chen, Yu Zhu and Sadhan C. Jana "Strong and Flexible Composite Solid Polymer Electrolyte Membranes for Li-Ion Batteries" *ACS Omega* 2019, 4, 19, 18203-18209. (impact factor: 3.512, citations=25)
- [68] Chung-Fu Cheng, Xiang Li, Kewei Liu, Feng Zou, Wei-Yao Tung, Yi-Fan Huang, Xuhui Xia, Chien-Lung Wang, Bryan D Vogt, Yu Zhu* "A High-Performance Lithium-Ion Capacitor with Carbonized NiCo₂O₄ Anode and Vertically-Aligned Carbon Nanoflakes Cathode" *Energy Storage Materials* 2019, 22, 265-274. (Invited as key advances in energy storage from the leading research teams across North America. impact factor: 17.789, citations=24)
- [67] Chung-Fu Cheng, Yu-Ming Chen, Feng Zou, Kewei Liu, Yanfeng Xia, Yi-Fan Huang, Wei-Yao Tung, Mohan Raj Krishnan, Bryan D Vogt, Chien-Lung Wang, Rong-Ming Ho, Yu Zhu* "Li-Ion Capacitor Integrated with Nano-network-Structured Ni/NiO/C Anode and Nitrogen-Doped Carbonized Metal-Organic Framework Cathode with High Power and Long Cyclability" *ACS Applied Materials & Interfaces*, 2019, 11, 30694-30702. (impact factor: 9.229, citations=26)
- [66] Feipeng Yang, Dillon Presto, Yanbo Pan, Kewei Liu, Leyao Zhou, Suresh Narayanan, Yu Zhu, Zhenmeng Peng, Mark D. Soucek, Mesfin Tsige and Mark D. Foster* "Proximity to Graphene Dramatically Alters Polymer Dynamics" *Macromolecules* 2019, 52, 14, 5074-5085. (impact factor: 5.985, citations=10)
- [65] Xiaoyi Chen, Wei-Yao Tung, Kun Yang, Yu-Ming Chen, Kewei Liu, Chung-Fu Cheng, Yu Zhu* "Electropolymerized Porous Conjugated Polymer Film as Electrode for Stable, High Energy Density Thin Film Asymmetric Supercapacitor" *ACS Applied Polymer Materials*, 2019, 1, 1634-1640. (impact factor:4.089, citations=5)
- [64] Ke Pan, Feng Zou, Marcello Canova, Yu Zhu, Jung-Hyun Kim* Systematic electrochemical characterizations of Si and SiO anodes for high-capacity Li-Ion batteries. *Journal of Power Sources* 413 (2019) 20–28(impact factor: 9.127, citations=53)
- [63] Kewei Liu, Chung-Fu Cheng, Leyao Zhou, Feng Zou, Wenfeng Liang, Miaoyu Wang, Yu Zhu* "A Shear Thickening Fluid Based Impact Resistant Electrolyte for Safe Li-Ion Batteries" *Journal of Power Sources* 2019 423, 297-304. (impact factor: 9.127, citations=23)
- [62] Wenfeng Liang, Yunfan Shao, Yu-Ming Chen, Yu Zhu* "A 4 V Cathode Compatible, Superionic Conductive Solid Polymer Electrolyte for Solid Lithium Metal Batteries with Long Cycle Life", *ACS Applied Energy Materials*, 2019, 1, 6064-6071. (impact factor: 6.024, citations=18)

- [61] Kun Yang, Xiang Li, Haichang Zhang, Yi-Fan Huang, Ram S. Bhatta, Jiawei Liu, Mesfin Tsige, Chien-Lung Wang, Stephen ZD Cheng, Yu Zhu* "Investigation of Hydrogen-Bonding Mediated Molecular Packing of Diketopyrrolopyrrole Based Donor-Acceptor Oligomers in The Solid State" *Polymer*, 2019, 160, 238-245. (impact factor: 4.430, citations=6)
- [60] Si Li, Yu-Ming Chen, Wenfeng Liang, Yunfan Shao, Kewei Liu, Zhorro Nikolov and Yu Zhu* "A Superionic Conductive, Electrochemically Stable Dual-Salt Polymer Electrolyte", *Joule* 2018, 2, 1838-1856. (impact factor: 41.248, citations=66)
- [59] Kewei Liu, Feng Zou, Yuandong Sun, Zitian Yu, Xinye Liu, Leyao Zhou, Yanfeng Xia, Bryan D. Vogt and Yu Zhu* "Self-assembled Mn₃O₄/C Nanospheres as High-Performance Anode Materials for Lithium Ion Batteries" *Journal of Power Sources* 2018 395, 92-97. (impact factor: 9.127, citations=18)
- [58] Jin Qian, Clinton G Wiener, Yu Zhu, Bryan D. Vogt* "Swelling and Plasticization of Polymeric Binders by Li-Containing Carbonate Electrolytes Using Quartz Crystal Microbalance with Dissipation", *Polymer*, 2018, 143, 237-244. (impact factor: 4.430, citations=9)
- [57] Haichang Zhang, Kewei Liu, Kuan-Yi Wu, Yu-Ming Chen, Ruonan Deng, Xiang Li, Hailiang Jin, Si Li, Steven Chuang, Chien-Lung Wang* and Yu Zhu* "Hydrogen-Bonding-Mediated Solid-State Self-Assembled Isoepindolidiones (isoEpi) Crystal for Organic Field-Effect Transistor", *The Journal of Physical Chemistry C* 2018, 122, 5888-5895. (impact factor: 4.126, citations=15)
- [56] Chung-Fu Cheng, Yu-Ming Chen, Feng Zou, Tsu-Yin Lin, Kewei Liu, Kai-Chieh Yang, Chi-Huang Lai, Rong-Ming Ho and Yu Zhu* "Nanoporous Gyroid Ni/NiO/C Nanocomposite from Block Copolymer Template with High Capacity and Stability for Lithium Storage " *Journal of Materials Chemistry A* 2018, 6, 13676-13684. (impact factor: 12.732, citations=24)
- [55] Kewei Liu, Changlin Zhang, Yuandong Sun, Guanghui Zhang, Xiaochen Shen, Feng Zou, Haichang Zhang, Zhenwei Wu, Evan C Wegener, Clinton J Taubert, Jeffrey T Miller*, Zhenmeng Peng* and Yu Zhu* "High-performance transition metal phosphide alloy catalyst for oxygen evolution reaction", *ACS Nano*, 2017, 12, 158-167 (impact factor: 15.881, citations=197)
- [54] Burcu E. Gurkana, Zhe Qiang, Yu-Ming Chen, Yu Zhu, and Bryan D. Vogt* Enhanced Cycle Performance of Quinone-Based Anodes for Sodium Ion Batteries by Attachment

to Ordered Mesoporous Carbon and Use of Ionic Liquid Electrolyte. *Journal of The Electrochemical Society*, 2017, 164, H5093-H5099. (impact factor: 4.316, citations=18)

- [53] Prasad Raut, Wenfeng Liang, Yu-Ming Chen, Yu Zhu, and Sadhan C. Jana* Syndiotactic Polystyrene-Based Ionogel Membranes for High Temperature Electrochemical Applications. *ACS Applied Materials & Interfaces*, 2017, 9, 30933-30942. (impact factor: 9.229, citations=37)
- [52] Zhe Qiang, Xinye Liu, Feng Zou, Kevin Cavicchi, Yu Zhu, Bryan Vogt* Bimodal Porous Carbon-Silica Nanocomposites for Li-Ion Batteries. *Journal of Physical Chemistry C*, 2017, 121, 16702-16709. (impact factor: 4.126, citations=21)
- [51] Haichang Zhang, Shuo Zhang, Yifan Mao, Kewei Liu, Yu-Ming Chen, Zhang Jiang, Joseph Strzalka, Wenjun Yang, Chien-Lung Wang, Yu Zhu* "Naphthodipyrrolidone (NDP) Based Conjugated Polymers with High Electron Mobility and Ambipolar Transport Properties", *Polymer Chemistry*, 2017, 8, 3255-3260. (impact factor: 5.582, citations=14)
- [50] Haichang Zhang, Ruonan Deng, Jing Wang, Xiang Li, Yu-Ming Chen, Kewei Liu, Clinton J Taubert, Stephen Z. D. Cheng, Yu Zhu* "Crystalline Organic Pigment Based Field Effect Transistors ", *ACS Applied Materials & Interfaces*, 2017, 9, 21891-21899, (impact factor: 9.229, citations=35)
- [49] Xinye Liu, Feng Zou, Kewei Liu, Zhe Qiang, Clinton J. Taubert, Putu Ustriyana, Bryan D. Vogt and Yu Zhu* "Binary Metal Organic Frameworks Derived Hierarchical Hollow Ni₃S₂/Co₉S₈/N-doped Carbon Composite with Superior Sodium Storage Performance" *Journal of Materials Chemistry A*, 2017, 5, 11781-11787. **(2017 Emerging Investigator Themed Collection)** (impact factor: 12.732, citations=81)
- [48] Haichang Zhang, Kun Yang, Yu-Ming Chen, Ram Bhatta, Mesfin Tsige, Stephen Z. D. Cheng, Yu Zhu*, "Polymers Based on Benzodipyrrolidone and Naphthodipyrrolidone with Latent Hydrogen-Bonding on the Main Chain" *Macromolecular Chemistry and Physics*, 2017, 218, 1600617 (impact factor: 2.527, citations=25)
- [47] Sarang M. Bhaway, Zhe Qiang, Yanfeng Xia, Xuhui Xia, Byeongdu Lee, Kevin G. Yager, Lihua Zhang, Kim Kisslinger, Yu-Ming Chen, Kewei Liu, Yu Zhu, and Bryan D. Vogt* "Operando Grazing Incidence Small Angle X-Ray Scattering/X-Ray Diffraction of Model Ordered Mesoporous Lithium Ion Batteries Anodes" *ACS Nano*, 2017, 11, 1443-1454(impact factor: 15.881, citations=30)

- [46] Zhe Qiang, Yu-Ming Chen, Burcu Gurkan, Yuanhao Guo, Miko Cakmak, Kevin A. Cavicchi, Yu Zhu, Bryan D. Vogt* "Cooperatively Assembled Nitrogen-doped Ordered Mesoporous Carbon/Iron Oxide Nanocomposites For Low-cost, Long Cycle Life Sodium-ion Batteries" *Carbon*, 2017, 116, 286-293 (impact factor: 9.594, citations=36)
- [45] Zhe Qiang, Yu-Ming Chen, Yanfeng Xia, Wenfeng Liang, Kevin A. Cavicchi, Yu Zhu* and Bryan D. Vogt* "Ultra-Long Cycle Life Room Temperature Sodium-Sulfur Batteries Enabled by Highly Doped (N, S) Nanoporous Carbons for Stationary Energy Storage" *Nano Energy* 2017, 32, 59-66. **(Yu Zhu and Bryan Vogt as co-corresponding author and Students from Zhu's group and Vogt's group as first authors with equal contribution)** (impact factor: 17.881, citations=138)
- [44] Kewei Liu, Zitian Yu, Xiaowen Zhu, Shuo Zhang, Feng Zou, Yu Zhu* "A Universal Surface Enhanced Raman Spectroscopy (SERS)-Active Graphene Cathode for Lithium-Air Battery Discharge Product Investigation", *RSC Advances*, 2016, 6, 102272-102279. (impact factor: 3.361, citations=6)
- [43] Feng Zou, Yu-Ming Chen, Kewei Liu, Zitian Yu, Wenfeng Liang, Min Gao, Sarang M. Bhaway, Yu Zhu* "Metal Organic Frameworks Derived Hierarchical Hollow NiO/Ni/Graphene Composites for Lithium and Sodium Storage" *ACS Nano*, 2016, 10, 377-386 (impact factor: 15.881, citations=417)
- [42] Yu-Ming Chen, Wenfeng Liang, Si Li, Feng Zou, Sarang M. Bhaway, Zhe Qiang, Min Gao, Bryan D. Vogt, Yu Zhu* "A Nitrogen Doped Carbonized Metal-organic Framework for High Stability Room Temperature Sodium-sulfur Batteries" *Journal of Materials Chemistry A* 2016, 4, 12471-12478(impact factor: 12.732, citations=117)
- [41] Ruixuan He, Mauricio Echeverri, Daniel Ward, Yu Zhu, and Thein Kyu* "Highly Conductive Solvent-free Polymer Electrolyte Membrane for Lithium-ion Batteries: Effect of Prepolymer Molecular Weight" *Journal of Membrane Science* 2016, 498, 208-217(impact factor: 8.742, citations=81)
- [40] Jeongwoo Lee, Yu-Ming Chen, Yu Zhu, Bryan D. Vogt* "Tuning SEI Formation on Nanoporous Carbon-titania Composite Sodium Ion Batteries Anodes and Performance with Subtle Processing Changes" *RSC Advances*, 2015, 5, 99329-99338 (impact factor: 3.361, citations=20)
- [39] Tianyu Meng, Chang Liu, Kai Wang, Tianda He, Yu Zhu, Abdullah Al-Enizi, Ahmed Elzatahry, Xiong Gong* "High Performance Perovskite Hybrid Solar Cells with E-beam-Processed TiOx Electron Extraction Layer" *ACS Applied Materials & Interfaces* 2016, 8, 1876-1883 (impact factor: 9.229, citations=32)

- [38] Sarang M. Bhaway, Yu-Ming Chen, Yuanhao Guo, Pattarasai Tangvijitsakul, Mark D. Soucek, Miko Cakmak, Yu Zhu, Bryan D. Vogt* "Hierarchical Electrospun and Cooperatively Assembled Nanoporous Ni/NiO/MnOx/Carbon Nanofiber Composites for Lithium Ion Battery Anodes" *ACS Applied Materials & Interfaces* 2016, 8 (30), 19484-19493 (impact factor: 9.229, citations=28)
- [37] Abdul-Rahman O. Raji, Tanvi Varadhachary, Kewang Nan Tuo Wang, Jian Lin, Yongsung Ji, Bostjan Genorio, Yu Zhu, Carter Kittrell, James M. Tour* "Composites of Graphene Nanoribbon Stacks and Epoxy for Joule Heating and Deicing of Surfaces" *ACS Applied Materials & Interfaces* 2016, 8 (5), 3551-3556 (impact factor: 9.229, citations=75)
- [36] Kewei Liu, Yu-Ming Chen, Gina M. Policastro, Matthew L. Becker, Yu Zhu* "Three-dimensional Bi-continuous Graphene Monolith from Polymer Templates" *ACS Nano* 2015, 9(6), 6041-6049 (impact factor: 15.881, citations=55)
- [35] Yu-Ming Chen, Aozhen Xie, Yu Zhu* "Cyclability of a Lithium-Oxygen Battery Containing N-Methyl-2-Pyrrolidone and a Vertically Aligned Carbon Nanotube Cathode" *ChemElectroChem* 2015, 2(2), 208-212 (impact factor: 4.590, citations=7)
- [34] Yu-Ming Chen, Yu Zhu* "CVD of Carbon Nanotubes in Porous Nickel for Anodes in Lithium Ion Battery" *Current Opinion in Chemical Engineering* 2015, 7, 32-39 (impact factor: 5.164, citations=8)
- [33] Kun Yang, Tianda He, Xiaoyi Chen, Stephen Z. D. Cheng, Yu Zhu* "Patternable Conjugated Polymers with Latent Hydrogen-bonding on the Main Chain" *Macromolecules* 2014, 47 (24), 8479-8486 (impact factor: 5.985, citations=45)
- [32] Tianda He, Aozhen Xie, Darrell H. Reneker, Yu Zhu* "A Tough and High-Performance Transparent Electrode from a Scalable and Transfer-Free Method" *ACS Nano* 2014, 8 (5), 4782-4789 (impact factor: 15.881, citations=98)
- [31] Jeongwoo Lee, Yu-Ming Chen, Yu Zhu, Bryan D. Vogt* "Fabrication of Porous Carbon/TiO₂ Composites through Polymerization-Induced Phase Separation and Use as An Anode for Na-Ion Batteries" *ACS Applied Materials & Interfaces* 2014, 6 (23), 21011-21018. (impact factor: 9.229, citations=79)
- [30] Pei Dong, Yu Zhu*, Jing Zhang, Feng Hao, Jingjie Wu, Sidong Lei, Hong Lin, Robert H Hauge, James M Tour*, Jun Lou* "Vertically Aligned Carbon Nanotubes/Graphene Hybrid Electrode as a TCO- and Pt- free Flexible Cathode for Solar Cell Applications"

Journal of Materials Chemistry A 2014, 2, 20902-20907. (Yu Zhu as corresponding author at U. Akron) (impact factor: 12.732, citations=40)

- [29] Pei Dong, Yu Zhu*, Jing Zhang, Cheng Peng, Zheng Yan, Lei Li , Zhiwei Peng , Gedeng Ruan , Wanyao Xiao , Hong Lin , James M. Tour*, Jun Lou* "Graphene on Metal Grids as the Transparent Conductive Material for Dye Sensitized Solar Cell" *Journal of Physical Chemistry C* 2014, 118 (45), 25863–25868. (Yu Zhu as corresponding author at U. Akron, Yu Zhu's student Wanyao Xiao as co-author) (impact factor: 4.309, citations=40)
- [28] Abdul-Rahman O. Raji, Sydney Salters, Errol L. G. Samuel, Yu Zhu, Vladimir Volman, James M. Tour* "Functionalized Graphene Nanoribbon Films as a Radiofrequency and Optically Transparent Material" *ACS Applied Materials & Interfaces* 2014, 6 (19), 16661–16668 (impact factor: 9.229, citations=19)
- [27] Vladimir Volman||, Yu Zhu||, Abdul-Rahman O Raji, Bostjan Genorio , Wei Lu , Changsheng Xiang , Carter Kittrell , James M. Tour* "Radiofrequency Transparent, Electrically Conductive Graphene Nanoribbon Thin Films as De-icing Heating Layers" *ACS Applied Materials & Interfaces* 2014, 6 (1), 298–304 (||with equal contribution) (impact factor: 9.229, citations=43)
- [26] Chenguang Zhang, Zhiwei Peng, Jian Lin, Yu Zhu, Gedeng Ruan, Chih-Chau Hwang, Wei Lu, Robert H. Hauge, and James M. Tour* "Splitting of a Vertical Multiwalled Carbon Nanotube Carpet to a Graphene Nanoribbon Carpet and Its Use in Supercapacitors" *ACS Nano* 2013, 7(6), 5151–5159 (impact factor: 15.881, citations=77)
- [25] Jian Lin, Chenguang Zhang, Zheng Yan, Yu Zhu, Zhiwei Peng, Robert H Hauge, Douglas Natelson, James M Tour* "3-Dimensional Graphene Carbon Nanotube Carpet-Based Microsupercapacitors with High Electrochemical Performance" *Nano Letters* 2013, 13, 72-78(impact factor: 11.189, citations=652)
- [24] Wei Lu, Gedeng Ruan, Bostjan Genorio, Yu Zhu, Barbara Novosel, Zhiwei Peng, James M Tour* "Functionalized Graphene Nanoribbons via Anionic Polymerization Initiated by Alkali Metal-Intercalated Carbon Nanotubes" *ACS Nano* 2013, 7, 2669-2675 (impact factor: 15.881, citations=35)
- [23] Yu Zhu, Lei Li, Chenguang Zhang, Gilberto Casillas, Zhengzong Sun, Zheng Yan, Gedeng Ruan, Zhiwei Peng, Abdul-Rahman O Raji, Carter Kittrell, Robert H Hauge, James M Tour* "A Seamless Three-Dimensional Carbon Nanotube Graphene Hybrid Material" *Nature Communications* 2012, 3, 1225 (impact factor: 14.919, citations=515)

- [22] Yu Zhu, Dustin K James, James M Tour* "New Routes to Graphene, Graphene Oxide and Their Related Applications" *Advanced Materials* 2012, 24, 4924-4955 (impact factor: 30.849, citations=334)
- [23] Yu Zhu, Xianyu Li, Qinjia Cai, Zhengzong Sun, Gilberto Casillas, Miguel Jose-Yacaman, Rafael Verduzco, James M Tour* "Quantitative Analysis of Structure and Bandgap Changes in Graphene Oxide Nanoribbons during Thermal Annealing" *Journal of the American Chemical Society* 2012, 134, 11774-11780 (impact factor: 15.419, citations=47)
- [22] Yu Zhu, James M Tour* "Organic Light-Emitting Diodes Non-oxide Boost" *Nature Photonics* 2012, 6, 72-73 (impact factor: 38.771, citations=11)
- [21] Zheng Yan, Lulu Ma, Yu Zhu, Indranil Lahiri, Myung Gwan Hahm, Zheng Liu, Shubin Yang, Changsheng Xiang, Wei Lu, Zhiwei Peng, Zhengzong Sun, Carter Kittrell, Jun Lou, Wonbong Choi, Pulickel M Ajayan, James M Tour* "Three-Dimensional Metal-Graphene-Nanotube Multifunctional Hybrid Materials" *ACS Nano* 2012, 7, 58-64 (|| with equal contribution) (impact factor: 15.881, citations=216)
- [20] Bostjan Genorio, Wei Lu, Ayrat M Dimiev, Yu Zhu, Abdul-Rahman O Raji, Barbara Novosel, Lawrence B Alemany, James M Tour* "In Situ Intercalation Replacement and Selective Functionalization of Graphene Nanoribbon Stacks" *ACS Nano* 2012, 6, 4231-4240 (impact factor: 15.881, citations=127)
- [19] Zhengzong Sun, Abdul-Rahman O Raji, Yu Zhu, Changsheng Xiang, Zheng Yan, Carter Kittrell, ELG Samuel, James M Tour* "Large-Area Bernal-Stacked Bi-, Tri-, and Tetralayer Graphene" *ACS Nano* 2012, 6, 9790-9796 (impact factor: 15.881, citations=169)
- [18] Changsheng Xiang, Wei Lu, Yu Zhu, Zhengzong Sun, Zheng Yan, Chi-Chau Hwang, and James M. Tour* "Carbon Nanotube and Graphene Nanoribbon-Coated Conductive Kevlar Fibers" *ACS Applied Materials & Interfaces* 2012, 4, 131-136. (impact factor: 9.229, citations=85)
- [17] Zheng Yan, Jian Lin, Zhiwei Peng, Zhengzong Sun, Yu Zhu, Lei Li, Changsheng Xiang, E Loïc Samuel, Carter Kittrell, James M Tour* "Toward the Synthesis of Wafer-Scale Single-Crystal Graphene on Copper Foils" *ACS Nano* 2012, 6, 9110-9117 (impact factor: 15.881, citations=629)

- [16] Zheng Yan, Jun Yao, Zhengzong Sun, Yu Zhu, James M Tour* "Controlled Ambipolar-to-Unipolar Conversion in Graphene Field-Effect Transistors Through Surface Coating with Poly(ethylene imine)/Poly(ethylene glycol) Films" *Small* 2012, 8, 59-62 (impact factor: 13.281, citations=36)
- [15] Yu Zhu, Zhengzong Sun, Zheng Yan, Zhong Jin, James M Tour* "Rational Design of Hybrid Graphene Films for High-Performance Transparent Electrodes" *ACS Nano* 2011, 5, 6472-6479 (impact factor: 15.881, citations=314)
- [14] Yu Zhu, Wei Lu, Zhengzong Sun, Dmitry V Kosynkin, Jun Yao, James M Tour "High Throughput Preparation of Large Area Transparent Electrodes Using Non-Functionalized Graphene Nanoribbons" *Chemistry of Materials* 2011, 23, 935-939 (impact factor: 9.811, citations=29)
- [13] Zhengzong Sun, Cary L Pint, Daniela C Marcano, Chenguang Zhang, Jun Yao, Gedeng Ruan, Zheng Yan, Yu Zhu, Robert H Hauge, James M Tour* "Towards Hybrid Superlattices in Graphene" *Nature Communications* 2011, 2, 559 (impact factor: 14.919, citations=146)
- [12] Zheng Yan, Zhiwei Peng, Zhengzong Sun, Jun Yao, Yu Zhu, Zheng Liu, Pulickel M Ajayan, James M Tour* "Growth of Bilayer Graphene on Insulating Substrates" *ACS Nano* 2011, 5, 8187-8192 (impact factor: 15.881, citations=304)
- [11] Zheng Yan, Zhengzong Sun, Wei Lu, Jun Yao, Yu Zhu, James M Tour* "Controlled Modulation of Electronic Properties of Graphene by Self-Assembled Monolayers on SiO₂ Substrates" *ACS Nano* 2011, 5, 1535-1540 (impact factor: 15.881, citations=112)
- [10] Bernd Tieke*, A Raman Rabindranath, Kai Zhang, Yu Zhu "Conjugated Polymers Containing Diketopyrrolopyrrole Units in The Main Chain" *Beilstein Journal of Organic Chemistry* 2010, 6, 830-845 (impact factor: 2.883, citations=158)
- [9] Yu Zhu, James M Tour* "Graphene Nanoribbon Thin Films Using Layer-by-Layer Assembly" *Nano Letters* 2010, 10, 4356-4362. (impact factor: 11.189, citations=77)
- [8] Zhengzong Sun, Zheng Yan, Jun Yao, Elvira Beitler, Yu Zhu, James M Tour* "Growth of Graphene from Solid Carbon Sources" *Nature* 2010, 468, 549-552 (impact factor: 49.962, citations=1404)
- [7] Yu Zhu, Amanda L Higginbotham, James M Tour* "Covalent Functionalization of Surfactant-Wrapped Graphene Nanoribbons" *Chemistry of Materials* 2009, 21, 5284-5291 (impact factor: 9.811, citations=150)

- [6] Zhong Jin, Jay R Lomeda, B Katherine Price, Wei Lu, Yu Zhu, James M Tour* "Mechanically Assisted Exfoliation and Functionalization of Thermally Converted Graphene Sheets" *Chemistry of Materials* 2009, 21, 3045-3047 (impact factor: 9.811, citations=104)
- [5] Yu Zhu, Kai Zhang, Bernd Tieke* "Electrochemical Polymerization of Bis(3,4-ethylenedioxythiophene)-Substituted 1,4-Diketo-3,6-diphenyl-pyrrolo 3,4-c pyrrole (DPP) Derivative" *Macromolecular Chemistry and Physics* 2009, 210, 431-439 (impact factor: 2.527, citations=37)
- [4] A Raman Rabindranath, Yu Zhu, Kai Zhang, Bernd Tieke* "Purple Red and Luminescent Polyiminoarylenes Containing The 1, 4-Diketo-3,6-diphenylpyrrolo[3,4-c]pyrrole (DPP) Chromophore" *Polymer* 2009, 50, 1637-1644 (impact factor: 4.430, citations=32)
- [3] Yu Zhu, A Raman Rabindranath, Thomas Beyerlein, Bernd Tieke* "Highly Luminescent 1, 4-Diketo-3,6-diphenylpyrrolo[3,4-c]pyrrole-(DPP-) Based Conjugated Polymers Prepared upon Suzuki Coupling" *Macromolecules* 2007, 40, 6981-6989 (impact factor: 5.985, citations=167)
- [2] Yu Zhu, Ingo Heim, Bernd Tieke* "Red Emitting Diphenylpyrrolopyrrole (DPP)-based Polymers Prepared by Stille and Heck Coupling" *Macromolecular Chemistry and Physics* 2006, 207, 2206-2214 (impact factor: 2.527, citations=63)
- [1] A Raman Rabindranath, Yu Zhu, Ingo Heim, Bernd Tieke*, "Red Emitting N-Functionalized Poly(1,4-diketo-3,6-diphenylpyrrolo[3,4-c]pyrrole)(Poly-DPP): A Deeply Colored Polymer with Unusually Large Stokes Shift" *Macromolecules* 2006, 39, 8250-8256 (impact factor: 5.985, citations=110)

PRESENTATIONS

Invited Seminars and invited presentation in conferences

- 1) "Novel Metal Complex Catholytes for Aqueous Redox Flow Batteries" MRS Meeting Spring, April 24, 2024, Seattle.
- 2) "Novel Metal Complex Catholytes for Aqueous Redox Flow Batteries" International Battery Seminar & Exhibit, 2023, March 20-23, 2023, Orlando.
- 3) "Toward Superionic Conductive Polymer Electrolytes for Lithium Ion Batteries" Oak Ridge National Laboratory Soft Matter Symposium 2022, October 27, 2022
- 4) "Molecular Packing of π -Conjugated Molecules through Fused Hydrogen Bond-mediated Self-assembly", Polymer Physics & Polymer Spectroscopy Webinar, University of Halle, Germany, June, 25, 2020

- 5) "Functional Polymers for Energy and Electronics Applications" Michigan State University, East Lansing, MI, January 9, 2020
- 6) "Highly-conductive, Low-cost Polymer Adhesive Composites" 2019 DOE DuraMAT Workshop, Denver, August 27, 2019
- 7) "Impact-resistant electrolyte with nanofillers for safe Li-ion batteries" 2019 Fall ACS National Meeting, San Diego, 2D Materials & Beyond: Innovative Materials, Assemblies & Devices for Energy & Fuel, August, 26, 2019
- 8) "Polymer-templated, Porous Composites for Energy Storage" 2019 Fall ACS National Meeting, San Diego, ENFL: Atomic-level Understanding & Design of Materials & Processes for Energy Applications, August 25, 2019
- 9) "Porous Composites for Electrochemical Energy Storage" 63 ANNUAL MAY CONFERENCE Microscopy Society of NE Ohio, May 22, 2019
- 10) "High-performance, Transition-Metal Phosphide Catalysts for Oxygen-evolution Reaction" 2019 Spring ACS National Meeting, Orlando, ENFL: Applied Electrocatalysis for Renewable Energy & Synthesis, April 1, 2019
- 11) "Novel Organic Dye based Redox Molecules for Aqueous Organic Redox Flow Batteries" 2019 Annual Meeting-International Coalition for Energy Storage and Innovation (IECSI-PPSS), January 6, 2019
- 12) "Novel Electrically Conductive Adhesive Materials with Multiple Fillers" 2018 DOE DuraMAT Workshop, SLAC, August 29, 2019
- 13) "Metal Organic Frameworks (MOFs) Derived Nanostructures for Electrochemical Energy Storage" 2018 Fall ACS National Meeting, Boston, 2D Materials: Innovative Materials and Devices for Energy and Fuel, August 20, 2018
- 14) University of Akron, Polymers Appreciation Days and the College of Polymer Science and Polymer Engineering's 30th Anniversary Celebration, "Conjugated Polymers with Fused Hydrogen Bond", May 10, 2018
- 15) "Phase Diagram Guided Rational Design of Superionic Conductive, Electrochemically Stable Dual-salt Polymer Electrolyte ", 2018 Annual Meeting-International Coalition for Energy Storage and Innovation (ICESI), January 17, 2018
- 16) Nanjing University of Technology, Department of Chemical Engineering "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", January 14, 2018
- 17) "Design and Fabrication of Well-organized Carbon Nanomaterials for Energy Applications" American Carbon Society Graphene Symposium/Workshop November 15, 2017
- 18) "Highly-conductive, Low-cost Polymer Adhesive Composites with Complex Dimensional Fillers" 2017 DOE DuraMAT, BAPVC BAPVC Workshop, November 13, 2017

- 19) "High Ionic Conductivity Solid Polymer Electrolyte (SPE) for All-Solid-State Li-Ion Battery" MRS 2017 Fall Meeting, November 28, 2017,
- 20) "Advanced Silicon Composite Anodes for Lithium Ion Battery", International Workshop on Thin-Films for Electronics, Electro-Optics, Energy & Sensors: TFE3S 2017, Dayton, OH, June 26, 2017
- 21) "2D Conductive Metal Organic Framework as Sulfur Host for Li-S Batteries", 254th ACS National Meeting, Washington DC, August 22, 2017
- 22) "A Dual-salt Superionic Conductive Polymer Electrolyte for Solid State Lithium Ion Battery" Beyond Lithium Ion Symposium-10 (BLI-X), June 27, 2017
- 23) Case Western Reserve University, Department of Macromolecular Science and Engineering " Design and Fabrication of Materials with Organized Structure for Organic Electronics and Energy Applications", April 21, 2017
- 24) Northeastern University, Department of Mechanical & Industrial Engineering, " Design and Fabrication of Well-organized Nanomaterials for Energy Applications" April 12, 2017
- 25) Tufts University, Department of Chemistry, "Molecular Packing of π -Conjugated Small Molecules and Polymers through Fused Hydrogen Bond-mediated Self-assembly", April 11, 2017
- 26) National Tsing Hua University, Taiwan, Department of Chemical Engineering, "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", Mar. 29, 2017
- 27) National Chiao Tung University, Taiwan, Department of Applied Chemistry, " Design and Fabrication of Materials with Organized Structure for Organic Electronics and Energy Storage Applications", Mar. 28, 2017
- 28) Texas A&M University, College Station, Department of Chemistry, "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", Mar. 24, 2017
- 29) Case Western Reserve University, Department of Chemistry "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", Mar. 9, 2017
- 30) NIST, Material Measurement Laboratory, "Molecular Packing of π -Conjugated Small Molecules and Polymers through Fused Hydrogen Bond-mediated Self-assembly", Feb. 17, 2017
- 31) University of Houston, Department of Electrical and Computer Engineering, "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", Jan. 27, 2017
- 32) Rice University, Department of Chemistry, "Design and Fabrication of Well-organized Nanomaterials for Energy Applications", Jan. 25, 2017
- 33) Hydrogen Bonding Assembled Organic 2D Semiconductors", 252nd ACS National Meeting, Philadelphia PA, Aug. 25, 2016

- 34) "Patternable conjugated polymers with latent hydrogen-bonding on the main chain", 47th ACS Central Regional Meeting, May 19, 2016
- 35) "Controlled Synthesis of Nanomaterials for Novel Applications" ACS Akron Section Annual Meeting, May 11, 2016
- 36) "Controlled Synthesis of Nanomaterials for Novel Applications", APS Akron Physics Club Annual Meeting, April 25, 2016
- 37) Binghamton University, Department of Physics, "Design and Fabrication of Materials with Organized Structure for Organic Electronics and Energy Storage Applications" Nov. 16, 2016
- 38) Kenyon College, Department of Chemistry, "Controlled Synthesis of Nanomaterials and Their Application in Energy Storage" Nov. 10, 2016
- 39) Kent State University, Department of Chemistry, "Controlled Synthesis of Nanomaterials and Their Application in Energy Storage", Nov. 4, 2016
- 40) Sandia National Lab, Advanced Materials Laboratory, "Synthesis and fabrication of functional (nano)materials from applications in energy", June 16, 2016
- 41) Pacific Northwest National Lab, Electrochemical Materials & Systems Group "Advanced Polymers for Electrochemical Energy Storage", May 27, 2016
- 42) "Hybrid Nanomaterials for Supercapacitor Application" 228th ECS National Meeting, San Diego CA, Oct. 12, 2015
- 43) "Hybrid 2D Materials for Electrochemical Energy Storage Applications", 249th ACS National Meeting, Denver CO, Mar. 24, 2015
- 44) Central Michigan University, Department of Physics "Controlled Synthesis of Nanomaterials and Their Application in Energy Storage", Sept. 15, 2015
- 45) PolyOne Corporation "Controlled synthesis and Assembly of Carbon Based Materials for New Applications", Aug. 16, 2013
- 46) John Carroll University, Department of Chemistry, "Controlled Synthesis and Assembly of Carbon Nanomaterials for New Applications", Feb. 18, 2015
- 47) GrafTech International Inc, "Nanocarbon Materials for Energy Storage", April 14, 2015
- 48) "Macro Porous Graphene from Hollow Ni Templates via Polymer Templates with Bi-continuous Structure", 248th ACS National Meeting, San Francisco CA, Aug. 14, 2014
- 49) "Hybrid 2D Materials for Energy Conversion Device", 247th ACS National Meeting Spring, Dallas TX, Mar. 19, 2014
- 50) NASA Glenn Research Center, "Controlled Synthesis and Assembly of Carbon Based Nanomaterials for New Applications", July 8, 2014
- 51) University of Cologne, Department of Physical Chemistry "Controlled Synthesis and Assembly of Carbon Nanomaterials for New Applications", Jan. 24, 2014

INTELLECTUAL PROPERTY

Patents

- 1) Yu Zhu, Xiang Li, Asymmetric Metal Complex as Active Material of Flow Battery (USPTO: 63/080,374)
- 2) Yu Zhu, Kewei Liu, Impact Resistant Electrolyte Enabling Safe Li-Ion Batteries (USPTO 62/717,292)
- 3) Yu Zhu, High Ionic Conductivity Solid Polymer Electrolyte Composite (US20190379034)
- 4) Hongyou Fan, Yu Zhu, Self-Assembly Method for Core/Shell Nanoparticles with Enhanced Emission (USPTO 62/509,389)
- 5) Yu Zhu, Feng Zou, Crosslinked Polymer Binders for Electrochemical Energy Storage Devices (US 20200350588 A1)
- 6) Yu Zhu, Tianda He Conductive Film and Method of Making Same (WO 2015109137 A1)
- 7) James M. Tour, Yu Zhu Transparent electrodes based on graphene and grid hybrid structures, WO 2011112589 (2011)
- 8) James M. Tour, Yu Zhu Graphene-based thin films in heat circuits and methods of making the same, WO 2012100178 and US 20120208008 (2012) (Licensed)
- 9) James M. Tour, Yu Zhu Graphene nanoribbon composites and methods of making the same, WO2012112435 (2012) (Licensed)
- 10) Mathieu G. R. Turbiez, René Albert Johan Janssen, Martinus Maria Wienk, Hans Jürg Kirner, Mathias Düggeli, Bernd Tieke, Yu Zhu Diketopyrrolopyrrole polymers as organic semiconductors. WO2008000664 (2008)

PROFESSIONAL AND SCIENTIFIC SERVICE***Editorial Service***

- Editor-in-Chief, Colloidal and Polymer Science, Springer-Nature Publisher (since 2021)

Proposal Reviewer Service

- Department of Energy (BES, 2023)
- National Science Foundation Division of Civil, Mechanical, and Manufacturing Innovation (review panel 2015)
- National Science Foundation Division of Chemical, Bioengineering, Environmental, and Transport Systems (ad hoc 2018, 2019, 2023, 2024, review panel 2018, Career panel 2019)
- National Science Foundation Division of Materials Research (review panel 2015, ad hoc 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022)
- Army Research Office (2024)
- Petroleum Research Fund (ad hoc 2015, 2018, 2019, 2021)
- American Association for the Advancement of Science (ad hoc 2016, remote panel 2019)
- Deutsche Forschungsgemeinschaft, DFG (ad hoc 2015, 2017, 2019, 2024)
- Israel Science Foundation (ad hoc 2015)
- New University Researchers Start-Up Program of the Fonds de recherche du Québec (ad hoc 2013)

National Technical Service

- Chair “Polymer Processing Society” Conference 2014.
- Co-Chair “2D Materials for Energy Storage” at ACS National Meeting, 2014 Spring Meeting
- Co-Chair “2D Materials for Energy Storage” at ACS National Meeting, 2014 Fall Meeting,
- Co-Chair “2D Materials for Energy Storage” at ACS National Meeting, 2015 Fall Meeting,
- Symposium Organizer “2D Materials: Graphene and Beyond, and Their Device Applications” at ACS National Meeting, 2016 Fall Meeting.
- Symposium Organizer “2D Materials for Energy and Fuel” at ACS National Meeting, 2017 Fall Meeting.
- Co-Chair “Li-ion Battery and Beyond” at ECS National Meeting, 2017 Spring Meeting
- Symposium Organizer “2D Materials Symposium: Innovative Materials and Devices for Energy and Fuel” at ACS National Meeting, 2018 Fall Meeting.

- Symposium Organizer “2D Materials and Beyond: Innovative Materials, Assemblies, and Devices for Energy and Fuel” at ACS National Meeting, 2019 Fall Meeting.

Journal Referee Service

Science, Nature Energy, Nature Communications, Science Advances, Chemical Society Review, Journal of the American Chemical Society, ACS Nano, Nano Letters, Nano Energy, Advanced Materials, Advanced Functional Materials, Advanced Energy Materials, Advanced Materials Technologies, Advanced Electronic Materials, Journal of Material Chemistry A, Journal of Material Chemistry C, Nano Research, Nanoscale, Polymer Chemistry, Applied Surface Science, Chemistry of Materials, Carbon, Macromolecules, Macromolecular Chemistry and Physics, Chemical Communications, Chemistry A European Journal, Tetrahedron, ACS Applied Materials and Interfaces, Polymer, Journal of Applied Polymer Science, Scientific Reports, Journal of Physical Chemistry, Journal of Applied Physics, Chemelectrochem, Journal of Power Sources, ACS Applied Energy Materials, Energy Storage Materials, ACS Applied Nano Materials, ACS Applied Polymer Materials.