



















## Appendix D: SENIC 2021 Publications









Publications that acknowledge NSF support of SENIC using the grant number ECCS-1542174 or ECCS-2025462 (as identified through a Google Scholar search) are indicated below by the NNCI logo .





### Internal Journal Publications

- K. Adrah, S.C. Adegoke, K. Nowlin, and R. Tahergorabi, “Study of Oleogel as a Frying Medium for Deep-Fried Chicken”, *Journal of Food Measurement and Characterization*, vol. 16, pp. 1114-1123, 2021.
- S. Abdollahramezani, O. Hemmatyar, M. Taghinejad, H. Taghinejad, Y. Kiarashinejad, M. Zandehshahvar, T. Fan, S. Deshmukh, A. A. Eftekhar, W. Cai, E. Pop, M. A. El-Sayed, and A. Adibi, “Dynamic hybrid metasurfaces,” *Nano Letters*, vol. 21, no. 3, pp. 1238–1245, 2021.
- H. Ahmad, Z. Engel, C. M. Matthews, and W. Alan Doolittle, “p-type AlN Based Heteroepitaxial Diodes with Schottky, PIN and Junction Barrier Schottky Character Achieving Significant Breakdown Performance,” *Journal of Applied Physics*, vol. 130, no. 19, 2021.
- H. Ahmad, Z. Engel, M. Zia, A. S. Weidenbach, C. M. Matthews, B. Zivasatienraj, M. S. Bakir, and W. A. Doolittle, “Cascaded Ni hard mask to create chlorine-based ICP dry etched deep mesas for high-power devices,” *Semiconductor Science and Technology*, vol. 36, p. 125016, 2021.
- H. Ahmad, J. Lindemuth, Z. Engel, C. M. Matthews, K. Motoki, and W. A. Doolittle, “Substantial P-type Conductivity of AlN Achieved via Beryllium Doping,” *Advanced Materials*, vol. 33, no. 42, p. 2104497, 2021.
- K. Allado, M. Liu, A. Jayapalan, D. Arvapalli, K. Nowlin, and J. Wei. “Binary MnO<sub>2</sub>/Co<sub>3</sub>O<sub>4</sub> Metal Oxides Wrapped on Superaligned Electrospun Carbon Nanofibers as Binder Free Supercapacitor Electrodes”, *Energy & Fuels*, vol. 35, pp. 8396-8405, 2021. 
- M. Allam, T. Hu, S. Cai, K. Laxminarayanan, R. B. Hughley, and A. F. Coskun, “Spatially visualized single-cell pathology of highly multiplexed protein profiles in health and disease,” *Commun. Biol.*, vol. 4, p. 632, 2021. 
- Z. Y. Al Subeh, H. A. Raja, J. E. Burdette, J.O. Falkinham, S.E. Hemby, and N.H. Oberlies, “Three diketomorpholines from a *Penicillium* sp. (strain G1071)”, *Phytochemistry*, vol. 189, pp. 112830, 2021. 
- A.M. Amanso, T.C. Turner, A. Kamalakar, S.A. Ballestas, L.A. Hymel, J. Randall, R. Johnston, R.A. Arthur, N. Willett, E.A. Botchwey, and S.L. Goudy, “Local delivery of FTY720 induces neutrophil activation through chemokine signaling in an oronasal fistula model,” *Regen. Eng. Transl. Med.*, vol. 7, pp. 160–174, 2021. DOI: <https://doi.org/10.1007/s40883-021-00208-z>
- Yu An, Juanita Hidalgo, Carlo Andrea Riccardo Perini, Andrés-Felipe Castro-Méndez, Jacob N. Vagott, Kathryn Bairley, Shirong Wang, Xianggao Li, and Juan-Pablo Correa-Baena, “Structural Stability of Formamidinium- and Cesium-Based Halide Perovskites,” *ACS Energy Lett.*, vol. 6, no. 5, pp. 1942–1969, 2021. 
- Yu An, Carlo Andrea Riccardo Perini, Juanita Hidalgo, Andrés-Felipe Castro-Méndez, Jacob N. Vagott, Ruipeng Li, Wissam A. Saidi, Shirong Wang, Xianggao Li, and Juan-Pablo Correa-Baena, “Identifying high-performance and durable methylammonium-free lead halide perovskites via high-throughput synthesis and characterization,” *Energy Environ. Sci.*, vol. 14, pp. 6638-6654, 2021. 








- P. Arab, Z. Liu, M. Nasser, W. Qiu, M. Martinez, D. Flick, A. Roy, J. Liu, and W. J. Koros, "Subtle penetrant size effects on separation of carbon molecular sieve membranes derived from 6FDA:BPDA-DAM polyimide," *Carbon*, vol. 184, pp. 214-222, 2021.
- D. M. Arvapalli, A. T. Sheardy, J. J. Bang, and J. Wei, "Anti-proliferative and ROS Regulation Activity of Photoluminescent Curcumin-Derived Nanodots", *ACS Appl. Bio. Mater.*, vol. 4, pp. 8477-8486, 2021. 
- F. Aryeetey, S. Pourianejad, O. Ayanbajo, K. Nowlin, T. Ignatova, and S. Aravamudhan, "Bandgap recovery of monolayer MoS<sub>2</sub> using defect engineering and chemical doping", *RSC Advances*, vol. 11, pp. 20893-20898, 2021. 
- K. Asare, M. F. Hasan, A. Shahbazi, and L. Zhang, "A comparative study of porous and hollow carbon nanofibrous structures from electrospinning for supercapacitor electrode material development," *Surfaces and Interfaces*, vol. 26, pp.101386, 2021. 
- P. J. Ayare, S. A. Gregory, R. J. Key, A. E. Short, J. G. Tillou, J. D. Sitter, T. Yom, D. W. Goodlett, D-G Lee, F. M. Alamgir, M. D. Losego, and A. K. Vannucci, "Immobilization of molecular catalysts on solid supports via atomic layer deposition for chemical synthesis in sustainable solvents," *Green Chem.*, vol. 23, p. 9523, 2021.
- O. O. Ayodele, A.O. Adesina, S. Pourianejad, J. Averitt, and T. Ignatova, "Recent Advances in Nanomaterial-Based Aptasensors in Medical Diagnosis and Therapy", *Nanomaterials*, vol. 11, pp. 932, 2021. 
- M. Bakhtiary-Noodeh, M. Cho, Z. Xu, H. Jeong, A. N. Otte, S.-C. Shen, T. Detchprohm, A. K. Sood, J. W. Zeller, P. Ghuman, S. Babu, and R. D. Dupuis, "Demonstration of Uniform 6x6 GaN p-i-n UV Avalanche Photodiode arrays," *Proc. SPIE*, vol. 11686, p. 1168614, 2021.
- M. Bakhtiary-Noodeh, M. Cho, Z. Xu, T. Detchprohm, S.-C. Shen, and R. D. Dupuis, "High-Gain and Low-Dark Current GaN p-i-n Ultraviolet Avalanche Photodiodes Grown by MOCVD Fabricated Using Ion-Implantation Isolation," *Journal of Electronic Materials*, vol. 50, no. 8, pp. 4462-4468, 2021.
- J. T. Bamford, R. A. Smith, C. Z. Leng, W. R. Gutekunst, and M. D. Losego, "Measuring the glass transition temperature of vapor-phase infiltrated AlO<sub>x</sub>-PS-r-PHEMA organic-inorganic hybrid thin-film materials," *Macromolecules*, vol. 54, no. 14, p. 6790-6798, 2021. 
- M. Banerjee and B. Brettmann, "Stabilization of metastable indomethacin  $\alpha$  in cellulose nanocrystal aerogel scaffolds," *Pharmaceutics*, vol. 13, no. 4, p. 441, 2021. 
- A. Bar-Cohen, M. Asheghi, T. Chainer, S. V. Garimella, K. Goodson, C. Gorle, R. Mandel, J. Maurer, M. Ohadi, J. Palko, P. Parida, Y. Peles, J. Plawsky, M. Schultz, J. Weibel, and Y. Joshi, "The ICECool Fundamentals Effort on Evaporative Cooling of Microelectronics," *IEEE Trans. Components, Pack., and Manuf. Tech.*, vol. 11, no. 10, pp. 1546-1564, 2021.
- C. A. Barros et al., "Embedded Inductors Using Composite Magnetic Materials for 12-1-V Integrated Voltage Regulators," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 12, pp. 2183-2192, 2021.
- C. A. Barros et al., "Proposed Inductor Power Loss Metric and Novel Embedded Toroidal Inductor for Integrated Voltage Regulators," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 11, pp. 1935-1947, 2021.

- B.P. Bastakoti, D. Kuila, C. Salomon, M. Konarova, M. Eguchi, J. Na, and Y. Yamauchi, "Metal-incorporated mesoporous oxides: Synthesis and applications," *Journal of Hazardous Materials*, vol. 401, pp.123348, 2021.
- M. Bellardj and P. A. Kohl, "Design and Characterization of Package Embedded Solenoidal Magnetic Core inductors for High Frequency and High Efficiency SIP Integrated Voltage Regulators," *IEEE Transactions on Components, Packaging, and Manufacturing Technology*, vol. 11, no. 4, pp. 625-634, 2021. 
- J. Bentley, S. Desai, and B. P. Bastakoti, "Porous Tungsten Oxide: Recent Advances in Design, Synthesis, and Applications," *Chemistry–A European Journal*, vol. 27, pp.9241-9252, 2021.
- S. Bepari, R. Stevens-Boyd, N. Mohammad, X. Li, R. Abrokwah, and D. Kuila, "Composite mesoporous SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> supported Fe, FeCo and FeRu catalysts for Fischer-Tropsch studies in a 3-D printed stainless-steel microreactor," *Materials Today: Proceedings*, vol. 35, no. 2, pp. 221-228, 2021. 
- J. Berez and C. Saldana, "Fatigue of laser powder bed fusion processed 17-4 stainless steel using prior process exposed powder feedstock," *Journal of Manufacturing Processes*, vol. 71, pp. 515-527, 2021.
- A. Berman, E. DiLoreto, R. J. Moon, and K. Kalaitzidou, "Hollow glass spheres in sheet molding compound composites: Limitations and potential," *Polymer Composites*, vol. 42, no. 3, pp. 1279-1291, 2021.
- S. R. Bhattarai, S. Saudi, S. Khanal, S. Aravamudhan, C. J. Rorie, and N. Bhattarai, "Electrodynamic assisted self-assembled fibrous hydrogel microcapsules: A novel 3D in vitro platform for assessment of nanoparticle toxicity", *RSC Advances*, vol. 11, pp. 4921–4934, 2021. 
- G. M. Biesold, S. Liang, B. K. Wagner, Z. Kang, and Z. Lin, "Continuous production of ultrathin organic–inorganic Ruddlesden–Popper perovskite nanoplatelets via a flow reactor," *Nanoscale*, vol. 13, p. 13108-13115, 2021.
- I. Borne, D. He, S. DeWitt, M. Liu, A. Cooper, C. W. Jones, and R. P. Lively, "Polymeric Fiber Sorbents Embedded with Porous Organic Cages," *ACS Appl. Mater. Interf.*, vol. 13, pp. 47118-47126, 2021.
- Eleanor L. Brightbill, Hilena F. Gezahagne, Decarle S. Jin, Billyde Brown, and Eric M. Vogel, "Protein blocking inhibits ambient degradation of self-assembled monolayers for affinity biosensing," *Applied Surface Science*, vol. 557, p. 149843, 2021.
- Eleanor L. Brightbill, Katherine T. Young, Hilena F. Gezahagne, Decarle S. Jin, Bryce Hitchcock and Eric M. Vogel, "Protein interactions with chemical vapor deposited graphene modified by substrate," *2D Materials*, vol. 8, no. 2, p.025015, 2021. 
- N. P. Brown, C. B. Whittaker, J. J. Rimoli, W. J. Ready, and M. L. R. Walker, "Formation and Impact of Microcracks in Plasma Erosion of M26 Boron Nitride," *Journal of Propulsion and Power*, vol. 37, no. 1, 2021. 
- A. C. Brummer, A. T. Mohabir, D. Aziz, M. A. Filler, and E. M. Vogel, "Bottom-Up Fabrication and Characterization of a Self-Aligned Gate Stack for Electronics Applications," *Appl. Phys. Lett.*, vol. 119, p. 142901, 2021. 
- Amy C. Brummer, Amar T. Mohabir, Daniel Aziz, Michael A. Filler, and Eric M. Vogel, "Fabrication and characterization of a self-aligned gate stack for electronics applications," *Applied Physics Letters*, vol. 119, p. 142901, 2021.








- M. P. Bukhovko, L. Yang, L. Li, A. Malek, R. J. Davis, P. K. Agrawal, and C. W. Jones, "Anti-coking Performance of Electrodeposited Mn/MnO Surface Coating on Fe-Ni-Cr Alloy during Steam Cracking," *ACS Eng. Au*, vol. 1, no. 1, pp. 73–84, 2021. 
- M. P. Bukhovko, L. Yang, I. Nezam, L. Li, A. Malek, R. J. Davis, P. K. Agrawal, and C. W. Jones, "Enhanced Coke Gasification Activity of the Mn<sub>1.5</sub>Cr<sub>1.5</sub>O<sub>4</sub> Spinel Catalyst during Coking in Ethylene–Steam Mixtures," *Energy Fuels*, vol. 35, no. 6, pp. 5271–5280, 2021.
- P. Butreddy S. Laws, and P. Pansalawatte, "Supramolecular Chemistry of Folic Acid—Experimental and Computational Investigation," *Biophysical Reviews and Letters*, vol. 16, no. 3, pp. 95–109, 2021. 
- I. Campbell, A. Marnot, M. Ketcham, C. Travis, and B. Brettmann, "Direct Ink Write 3D Printing of High Solids Loading Bimodal Distributions of Particles," *AIChE Journal*, vol. 67, no. 12, p. e17412, 2021. 
- M. C. Carrasco, K. J. Dezarn, F. S. T. Khan, and S. Hematian, "Protonation of the Oxo-Bridged Heme/Copper Assemblies: Modeling the Oxidized State of the Cytochrome c Oxidase Active Site", *Journal of Inorganic Biochemistry*, vol. 225, pp. 111593–111596, 2021.
- Seleipiri Charles, Guillaume Aubry, Han-Ting Chou, Annalise B. Paaby, and Hang Lu, "High-Temporal-Resolution smFISH Method for Gene Expression Studies in *Caenorhabditis elegans* Embryos," *Analytical Chemistry*, vol. 93, no. 3, pp. 1369–1376, 2021.
- Shivesh Chaudhary, Sol Ah Lee, Yueyi Li, Dhaval S. Patel, and Hang Lu, "Graphical-model framework for automated annotation of cell identities in dense cellular images," *eLife*, vol. 10, p. e60321, 2021.
- L. Chen, J. Dang, J. Du, C. Wang, and Y. Mo, "Hydrogen and Halogen Bonding in Homogeneous External Electric Fields: Modulating the Bond Strengths", *Chemistry – A European Journal*, vol. 27, pp. 14042–14050, 2021. 
- L. Chen, Q. Feng, C. Wang, S. Yin, and Y. Mo, "Classical Electrostatics Remains the Driving Force for Inter-Anion Hydrogen and Halogen Bonding", *Journal of Physical Chemistry A*, vol. 125, pp. 10428–10438, 2021.
- R. Chen, J. H. Chow, Y. Zhou, J. Meth, and S. K. Sitaraman, "Cyclic Bending Effects on Resistance of Screen-Printed Silver Conductors," *IEEE Transactions on Components, Packaging, and Manufacturing Technology*, vol. 11, no. 11, pp. 1877–1888, 2021.
- R. Chen, Z. Lyu, Y. Shi, and Y. Xia, "Improving the purity and uniformity of Pd and Pt nanocrystals by decoupling growth from nucleation in a flow reactor," *Chemistry of Materials*, vol. 33, no. 10, pp. 3791–3801, 2021. 
- R. Chen, Q. N. Nguyen, M. Zhao, Z. Chen, M. Chi, and Y. Xia, "A simple route to the synthesis of Pt nanobars and the mechanistic understanding of symmetry breaking," *Chemistry: A European Journal*, vol. 27, no. 8, pp. 2760–2766, 2021. 
- R. Chen, Y. Shi, M. Xie, and Y. Xia, "Facile synthesis of platinum right bipyramids by separating and controlling the nucleation step in a continuous flow system," *Chemistry: A European Journal*, vol. 27, no. 55, pp. 13855–13863, 2021. 
- Wensi Chen, Ting Wang, Zeou Dou, and Xing Xie, "Microalgae harvesting by self-driven 3D microfiltration with rationally-designed porous superabsorbent polymer (PSAP) beads," *Environmental Science & Technology*, vol. 55, no. 22, pp. 15446–15455, 2021. 

- Yao Chen, Mengjiao Xu, Jieya Wen, Yu Wan, Qingfei Zhao, Xia Cao, Yong Ding, Zhong Lin Wang, Hexing Li, and Zhenfeng Bian, "Selective Recovery of Precious Metals through Photocatalysis," *Nature Sustainability*, vol. 4, pp. 618-626, 2021.
- M. A. Chilmonczyk, M. A., Doron, G., Kottke, P. A., Culberson, A. L., Leguineche, K., Guldberg, R. E., Horwitz, E., and Fedorov A. G., "Localized sampling enables monitoring of cell state via inline electrospray ionization mass spectrometry," *Biotechnol. J.*, vol. 16, no. 3, 2000277, 2021. 
- M. A. Chilmonczyk, and A. G. Fedorov, "Improving cell manufacturing outcomes using inline biomarker monitoring," *BioProcess Int.*, vol. 19, no. 3, pp. 2-6, 2021. DOI: <https://bpi.bioprocessintl.com/2021-readers-choice-awards-analytical>
- M. Cho, Z. Xu, M. Bakhtiary-Noodeh, H. Jeong, C.-W. Tsou, T. Detchprohm, R. D. Dupuis, and S.-C. Shen, "Effective Leakage Current Reduction in GaN Ultraviolet Avalanche Photodiodes with an Ion-Implantation Isolation Method," *IEEE Trans. Elect. Dev.*, vol. 68, pp. 2759-2763, 2021.
- H. C. Choi, G. P. Peterson, and C. Li, "Dynamic Processes of Nanobubbles: Growth, Collapse, and Coalescence," *J. of Heat Trans. Transactions of the ASME, Special Issue: Innovations and Advancements in Heat & Mass Transfer: Celebrating the Legacy of Professor Ephraim M. Sparrow*, vol. 102501, pp. 1-23, 2021.
- G. Christensen, D. Lou, H. Hong, and G. P. Peterson, "Improved thermal conductivity of fluids and composites using boron nitride nanoparticles (BN) through hydrogen bonding," *Thermal Acta*, vol. 700, p. 178927, 2021.
- Fatima Chrit, Abhishek Raj, Katherine Young, Nicholas Stone, Peter Shankles, Keshiharjun Lokireddy, Christopher Flowers, Edmund K Waller, Alexander Alexeev, and Todd Sulchek, "Microfluidic Platform to Transduce Cell Viability to Distinct Flow Pathways for High-Accuracy Sensing," *ACS Sensors*, vol. 6, no. 10, pp. 3789-3799, 2021.
- C.H. Chu, R. Liu, T. Ozkaya-Ahmadov, B. E. Swain, M. Boya, B. El-Reyes, M. Akce, M. A. Bilen, O. Kucuk, and A. F. Sarioglu, "Negative enrichment of circulating tumor cells from unmanipulated whole blood with a 3D printed device," *Scientific Reports*, vol. 11, p. 20583, 2021.
- O. Civelekoglu, R. Liu, C. F. Usanmaz, C.H. Chu, M. Boya, T. Ozkaya-Ahmadov, A. K. M. Arifuzzman, N. Wang, and A. F. Sarioglu, "Electronic measurement of cell antigen expression in whole blood," *Lab on a Chip*, vol. 22, no. 2, pp.296-312, 2021.
- Craig R. Clark, Holly N. Tinkey, Brian C. Sawyer, Adam M. Meier, Harley Hayden, et.al, "High-Fidelity Bell-State Preparation with  $^{40}\text{Ca}$  + Optical Qubits," *Physical Review Letters*, vol. 127, no. 13, p. 130505, 2021.
- Viviana Clavería, Patricia J Yang, Michael T Griffin, and David N. Ku, "Global thrombosis test: occlusion by coagulation or SIPA?," *TH Open*, vol. 5, no. 3, pp. ee400-e410, 2021. 
- X. Cui, L. Gao, S. Lei, S. Liang, J. Zhang, C. D. Sewell, W. Xue, Q. Liu, Z. Lin, and Y. Yang, "Simultaneously Crafting Single-Atomic Fe Sites and Graphitic Layer-Wrapped  $\text{Fe}_3\text{C}$  Nanoparticles Encapsulated within Mesoporous Carbon Tubes for Oxygen Reduction," *Advanced Functional Materials*, vol. 31, no. 10, p. 2009197, 2021.
- A. L. Culberson, M. A. Chilmonczyk, P. A. Kottke, A. C. Bowles, D. Ghosha, and A.G. Fedorov, "Sample-to-analysis platform for rapid intracellular mass spectrometry from small numbers of cells," *Lab on a Chip*, vol. 21, no. 23, pp. 4696 – 4706, 2021. 
- S. N. Dahotre, A. M. Romanov, F.-Y. Su, and G. A. Kwong, "Synthetic Antigen-Presenting Cells for Adoptive T Cell Therapy," *Advanced Therapeutics*, vol. 4, no. 8, p. 2100034, 2021. 










- A. G. M. Da Silva, R. Chen, Q. N. Nguyen, M. Vara, P. H. C. Camargo, and Y. Xia, "Hydroquinone-based synthesis of Pd nanostructures and the interplay of surface capping, reduction kinetics, attachment, diffusion, and fusion," *Chem. Mater.*, vol. 33, no. 21, pp. 8430-8439, 2021. 
- Marcus J. Daum, Arun Ramanathan, Alexander I. Kolesnikov, Stuart Calder, Martin Mourigal, and Henry S. La Pierre, "Collective excitations in the tetravalent lanthanide honeycomb antiferromagnet, Na<sub>2</sub>PrO<sub>3</sub>," *Physical Review B*, vol. 103, no. 12, p. L121109, 2021.
- D.R. Dautel and J.A. Champion, "Protein Vesicles Self-Assembled from Functional Globular Proteins with Different Charge and Size," *Biomacromolecules*, vol. 22, no. 1, pp. 116–125, 2021.
- S. Dawood, S. Shaji, G. Pathiraja, Y. Mo, and H. Rathnayake, "Molecular Magnetism in Nanodomains of Isorecticular MIL-88(Fe)-MOFs", *Physical Chemistry Chemical Physics*, vol. 23, pp. 21677-21689, 2021. 
- J. Delva-Wiley, I. Jahan, R. H. Newman, L. Zhang, and M. Dong, "Computational Analysis of the Binding Mechanism of GenX and HAS," *ACS Omega*, vol. 6, pp.29166-29170, 2021.
- C. Demolder, A. Molina, F. Hammond, and W. H. Yeo, "Recent Advances in Wearable Biosensing Gloves and Sensory Feedback Biosystems for Enhancing Rehabilitation, Prostheses, Healthcare, and Virtual Reality," *Biosensors and Bioelectronics*, vol. 190, p. 113443, 2021.
- G. D. Dickinson, G. M. Mortuza, W. Clay, L. Piantanida, C. M. Green, C. Watson, E. J. Hayden, T. Andersen, W. Kuang, E. Graunard, R. Zadegan, and W.L. Hughes, "An alternative approach to nucleic acid memory," *Nature communications*, vol. 12, pp. 1-10, 2021.
- R. Djorgbenoo, M.M.M. Rubio, Z. Yin, K. J. Moore, A. Jayapalan, J. Fiadorwu, B. Collins, B. Velasco, K. Allado, J. K. Tsuruta, C. B. Gorman, J. Wei, K. A. Johnson, and P. He, "Amphiphilic phospholipid-iodinated polymer conjugates for bioimaging", *Biomaterials Science*, vol. 9, pp. 5045-5056, 2021. 
- E. Dogan-Gunar, S. Brownell, G. Shueneman, M. Shofner, and J. Carson Meredith, "Enabling zero added-coalescent waterborne acrylic coatings with cellulose nanocrystals," *Progress in Organic Coatings*, vol. 150, p. 105969, 2021. 
- E. M. Dogan-Guner, G. T. Schueneman, M. L. Shofner, and J. C. Meredith, "Acryloyl-modified cellulose nanocrystals: effects of substitution on crystallinity and copolymerization with acrylic monomers," *Cellulose*, vol. 28, pp. 10875-10889, 2021. 
- A. Dunphy, K. Patel, S. Belperain, A. Pennington, N. H. Chiu, Z. Yin, X. Zhu, B. Priebe, S. Tian, J. Wei, X. Yi, and Z. Jia, "Modulation of macrophage polarization by carbon nanodots and elucidation of carbon nanodot uptake routes in macrophages", *Nanomaterials*, vol. 11, pp. 1116, 2021.
- A. Eid, J. G. D. Hester, and M. M. Tentzeris, "5G as a wireless power grid," *Scientific Reports*, vol. 11, p. 636, 2021. 
- T. El-Elimat, M. Figueroa, H. A. Raja, S. M. Alnabulsi, and N. H. Oberlies. "Coumarins, dihydroisocoumarins, a dibenzo- $\alpha$ -pyrone, a meroterpenoid, and a merodrimane from *Talaromyces amestolkiae*", *Tetrahedron letters*, vol. 72, pp.153067, 2021. 
- Z. Engel, E. A. Clinton, K. Motoki, H. Ahmad, C. M. Matthews, and W. A. Doolittle, "Adlayer control for tunable AlGaN self-assembled superlattices," *Journal of Applied Physics*, vol. 130, p. 165304, 2021.
- A. Engler, C. Lo, and P. A. Kohl, "Residue Analysis of Thermally Depolymerized Phthalaldehyde-Based Polymer Thin Films," *Polymers for Advanced Technologies*, vol. 32, no. 5, pp. 2142-2150, 2021.

- E. Ewaldz, J. Randrup, and B. Brettmann, B., "Solvent effects on the elasticity of electrospinnable polymer solutions," *ACS Polymers Au*, vol. 2, no. 2, pp. 108-117, 2021. 
- D. Fan, L. Chen, C. Wang, S. Yin, and Y. Mo, "Inter-Anion Chalcogen Bonds: Are They Anti-Electrostatic in Nature?," *Journal of Chemical Physics*, vol. 155, pp. 234302, 2021. 
- T. Fan, X. Wu, R. M. Krishna, A. H. Hosseinnia, A. A. Eftekhar, and A. Adibi, "Racetrack microresonator based electro-optic phase shifters on a 3C silicon-carbide-on-insulator platform," *Optics Letters*, vol. 46, no. 9, pp. 2135-2138, 2021.
- Dudong Feng, Eric J. Tervo, Dragica Vasileska, Shannon K. Yee, Ajeet Rohatgi, and Zhuomin M. Zhang, "Spatial profiles of photon chemical potential in near-field thermophotovoltaic cells," *Journal of Applied Physics*, vol. 129, no. 21, p. 213101, 2021.
- Domenica R. Fertal, Matteo Monai, Laura Proaño, Maxim P. Bukhovko, Jihyeon Park, Yong Ding, Bert M. Weckhuysen, and Anil C. Banerjee, "Calcination temperature effects on Pd/alumina catalysts: Particle size, surface species and activity in methane combustion," *Catalysis Today*, vol. 382, pp. 120-129, 2021.
- W. Fu, K. Turcheniuk, O. Naumov, R. Mysyk, F. Wang, M. Liu, D. Kim, X. Ren, A. Magasinski, M. Yu, X. Feng, Z. L. Wang, and G. Yushin, "Materials and Technologies for Multifunctional, Flexible or Integrated Supercapacitors and Batteries," *Materials Today*, vol. 48, pp. 176-197, 2021.
- Shambavi Ganesh, Thomas Hu, Eric Woods, Mayar Allam, Shuangyi Cai, Walter Henderson, and Ahmet F. Coskun, "Spatially resolved 3D metabolomic profiling in tissues," *Science Advances*, vol. 7, issue 5, 2021. 
- H. Gao, S. Zhong, W. Zhang, T. Igou, E. Berger, E. Reid, Y. Zhao, D. Lambeth, L. Gan, M. A. Afolabi, Z. Tong, G. Lan, and Y. Chen, "Revolutionizing Membrane Design Using Machine Learning-Bayesian Optimization," *Environ. Sci. Technol.* 2022, vol. 56, no. 4, pp. 2572-2581, 2021. 
- L. Gao, X. Cui, Z. Wang, C. D. Sewell, Z. Li, S. Liang, M. Zhang, J. Li, Y. Hu, and Z. Lin, "Operando Unraveling Photothermal-Promoted Dynamic Active Sites Generation in NiFe<sub>2</sub>O<sub>4</sub> for Markedly Enhanced Oxygen Evolution," *Proceedings of the National Academy of Sciences*, vol. 118, no. 7, p. e2023421118, 2021.
- S. Ghimire, L. Wang, B. Zhang, X. Li, and A. Shahbazi, "Production and modification of hydrochar from anaerobically digested cattail for adsorbing ammonium and phosphorous in wastewater," *Water Science and Technology*, vol. 84, pp.1678-1692, 2021. 
- R. Glaser, O. Borodin, B. Johnson, S. Jhulki, and G. Yushin, "Minimizing Long-Chain Polysulfide Formation in Li-S Batteries by Using Localized Low Concentration Highly Fluorinated Electrolytes," *Journal of Electrochemical Society*, vol. 168, no. 9, p. 090543, 2021.
- R. Goldoni, M. Farronato, S. T. Connelly, G. M. Tartaglia, and W.-H Yeo, "Recent advances in graphene-based nanobiosensors for salivary biomarker detection," *Biosensors and Bioelectronics*, vol. 171, p. 112723, 2021. 
- P. S. Goley, E. Preisler, and J. D. Cressler, "Zero-Process-Change SiGe Heterojunction Avalanche Photodiode for High-Speed, High-Gain Detection Near the Silicon Band Edg," *IEEE Electron Device Letters*, vol. 42, no. 9, pp. 1260-1263, 2021.
- R. Golovchak, A. Kovalskiy, Y. Shpotyuk, B. Mahlovanyi, D. Ploch, T. Ignatova, A. Kozdras, J. Cebulski, and S. Czopek, "Remedial insight on ageing of glass through the study of ancient man-made artefacts", *Archaeometry*, vol. 63, pp. 312-326, 2021. 








- Y. Gomaa, C. Kolluru, M. Milewski, D. Lee, J. Zhang, R. Saklatvala, and M.R. Prausnitz, "Development of a thermostable oxytocin microneedle patch," *Journal of Controlled Release*, vol. 337, pp. 81-89, 2021.
- J. L. Gonzalez, J. R. Brescia, T. Zheng, S. Kochupurackal Rajan, and M. S. Bakir, "A Die-Level, Replaceable Integrated Chiplet (PINCH) Assembly Using a Socketed Platform, Compressible MicroInterconnects, and Self-Alignment," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 12, pp. 2069-2076, 2021. 
- J. L. Gonzalez, S. Kochupurackal Rajan, J. R. Brescia, and M. S. Bakir, "A Substrate-Agnostic, Submicrometer PSAS-to-PSAS Self-Alignment Technology for Heterogeneous Integration," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 12, pp. 2061-2068, 2021. 
- M. Gonzalez, K. Minnici, B. Risteen, L. Wang, L. M. Housel, G. D. Renderos, K. J. Takeuchi, E. S. Takeuchi, A. C. Marschilok, T. F. Fuller, and E. Reichmanis, "Active Material Interfacial Chemistry and Its Impact on Composite Magnetite Electrodes," *ACS Appl. Energy Mater.*, vol. 4, no. 9, pp. 9836-9847, 2021. 
- M. P. Gordon, S. A. Gregory, J. P. Wooding, S. Ye., G. M. Su, D. S. Seferos, M. D. Losego, J. J. Urban, S. K. Yee, and A. K. Menon, "Microstructure and heteroatom dictate the doping mechanism and thermoelectric properties of poly(alkyl-chalcogenophenes)," *Appl. Phys. Lett.*, vol. 118, no. 23, p. 233301, 2021. 
- S. A. Gregory, R. Hanus, A. Atassi, J. M. Rinehart, J. P. Wooding, A. K. Menon, M. D. Losego, G. J. Snyder, and S. K. Yee, "Quantifying charge carrier localization in chemically doped semiconducting polymers," *Nat. Mater.*, vol. 20, p. 1414, 2021.
- S. A. Gregory, Y. Li, T. D. Monroe, J. Li, S. K. Yee, and M. D. Losego, "Vapor phase infiltration doping of the semiconducting polymer poly(aniline) with  $\text{TiCl}_4 + \text{H}_2\text{O}$ : Mechanisms, reaction kinetics, and electrical and optical properties," *ACS Appl. Polym. Mater.*, vol. 3, no. 2, p. 720-729, 2021. 
- S. A. Gregory, J. F. Ponder, S. L. Pittelli, M. D. Losego, J. R. Reynolds, and S. K. Yee, "Thermoelectric and Charge Transport Properties of Solution-Processable and Chemically Doped Dioxythienothiophene Copolymers," *ACS Applied Polymer Materials*, vol. 3, no. 5, pp. 2316-2324, 2021. 
- Michael T. Griffin, Katrina Ashworth, Nathaniel Hill, Jaydra von Behren, Jorge Di Paola, and David N. Ku, "Negatively charged nanoparticles of multiple materials inhibit shear-induced platelet accumulation," *Nanomedicine: Nanotechnology, Biology and Medicine*, vol. 35, p. 102405, 2021. 
- P. Gupta, H. Wen, L. Di Francesco, and F. Ayazi, "Detection of pathological mechano-acoustic signatures using precision accelerometer contact microphones in patients with pulmonary disorders," *Scientific Reports*, vol. 11, p. 13427, 2021.
- B. Hamelin, J. Yang, and F. Ayazi, "Precision Deep Reactive Ion Etching of Monocrystalline 4H-SiCOI for Bulk Acoustic Wave Resonators with Ultra-low Dissipation," *Journal of the Electrochemical Society*, vol. 168, p. 017512, 2021. 
- S. Y. Han, C. Lee, J. A. Lewis, D. Yeh, Y. Liu, H.-W. Lee, and M. T. McDowell, "Stress Evolution during Cycling of Alloy-Anode Solid-State Batteries," *Joule*, vol. 5, no. 9, pp. 2450-2465, 2021. 
- E. Haque, S. Shariatnia, T. J. Jeong, D. Jarrahbashi, A. Asadi, T. Harris, R. J. Moon, and K. Kalaitzidou, "Scalable coating methods for enhancing glass fiber-epoxy interactions with cellulose nanocrystals," *Cellulose*, vol. 28, no. 8, pp. 4685-4700, 2021.









- B. J. Hare, R. A. Garcia Carcamo, T. Xie, P. J. Meza-Morales, R. B. Getman, and C. Sievers, "Active sites and effects of co-adsorbed H<sub>2</sub>O on isolated methanol dehydrogenation over Pt/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub>," *Journal of Catalysis*, vol. 402, pp. 218-228, 2021. 
- Y. Harn, S. Liang, S. Liu, Y. Yan, Z. Wang, J. Jiang, J. Zhang, Q. Li, Y. He, Z. Li, L. Zhu, H. Cheng, and Z. Lin, "Tailoring Electrocatalytic Activity of in-situ Crafted Perovskite Oxide Nanocrystals via Precise Size and Dopant Control," *Proceedings of the National Academy of Sciences*, vol. 118, no. 25, p. e2014086118, 2021.
- Y. He, N. Liu, and P. A. Kohl, "Difunctional Block Copolymer with Ion Solvating and Crosslinking Sites as Solid Polymer Electrolyte for Lithium Batteries," *Journal of Power Sources*, vol. 481, p. 228832, 2021.
- Y. He, N. Liu, and P. A. Kohl, "Lithium Ion Conduction in Diblock Polymer Electrolytes with Tethered Anion," *Chemistry Select*, vol. 6, no. 4, pp. 595-599, 2021.
- R. Herbert, H. Lim, S. Park, J. Kim, and W. H. Yeo, "Recent Advances in Printing Technologies of Nanomaterials for Implantable Wireless Systems in Health Monitoring and Diagnosis," *Advanced Healthcare Materials*, vol. 10, no. 17, p. 2100158, 2021.
- M. S. B. Hoque, Y. Rui, K. Aryana, E. R. Hogle, J. L. Braun, D. H. Olson, J. T. Gaskins, H. Ahmad, M. Mohammad, M. Elahi, J. K. Hite, Z. C. Leseman, W. Alan Doolittle, and P. E. Hopkins, "Thermal conductivity measurements of sub-surface buried substrates by steady-state thermoreflectance," *Review of Scientific Instruments*, vol. 92, no. 6, p. 064906, 2021.
- W. Hu, S. Jhulki, W. Fu, L. Chen, F. Wang, K. Turcheniuk, A. Magasinski, and G. Yushin, "Strain-Induced Transformation of Bulk Alloys to Zinc Nanowires," *Chemistry of Materials*, vol. 33, no. 13, pp. 5368-5376, 2021. 
- Y. Hu, M. O. Hossen, Z. Wan, M.S. Bakir, and Y. Joshi, "Compact Transient Thermal Model of Microfluidically Cooled Three-Dimensional Stacked Chips With Pin-Fin Enhanced Microgap," *ASME J. Electron. Packag.*, vol. 143, no. 3, p. 031007, 2021.
- Y. Hu and Y. Joshi, "Thermosiphon Cooled Three Dimensional Stacked Heat Sources," *IEEE Trans. Components, Pack., and Manuf. Tech.*, vol. 11, no. 10, pp. 1695-1702, 2021.
- Y. Hu, T. Sarvey, M. Bakir, and Y. Joshi, "Single-Phase Liquid Cooling of High Heat Flux Devices With Local Hotspot in a Micro-Gap With Non-Uniform Fin Array," *ASME J. Heat Transfer*, vol. 143, no. 3, p. 031501, 2021.
- G. Huang, M. Mandal, N. Hassan, K. Groenhout, A. Dobbs, W. Mustain, and P. A. Kohl, "Ionomer Optimization for Water Uptake and Swelling in Anion Exchange Membrane Electrolyzer: Hydrogen Evolution Electrode," *Journal of the Electrochemical Society*, vol. 168, p. 024503, 2021.
- Ying-Yuan Huang, Young-Woo Ok, Keeya Madani, Wookjin Choi, Ajay Upadhyaya, Vijay Upadhyaya, Brian Rounsaville, Vinodh Chandrasekaran, and Ajeet Rohatgi, "~ 23% rear side poly-Si/SiO<sub>2</sub> passivated silicon solar cell with optimized ion-implanted boron emitter and screen-printed contacts," *Solar Energy Materials and Solar Cells*, vol. 230, p. 111183, 2021. 
- J. Hur, Y.-C. Luo, N. Tasneem, A. I. Khan, and S. Yu, "Ferroelectric hafnium zirconium oxide compatible with back-end-of-line process," *IEEE Trans. Electron Devices*, vol. 68, no. 7, pp. 3176-3180, 2021. 
- J. Hur, Y.-C. Luo, Z. Wang, S. Lombardo, A. I. Khan, and S. Yu, "Characterizing ferroelectric properties of Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> from deep-cryogenic temperature (4 K) to 400 K," *IEEE Journal on Exploratory Solid-State Computational Devices and Circuits (JXCDC)*, vol. 7, no. 2, pp. 168-174, 2021.









- J. Hur, P. Wang, N. Tasneem, Z. Wang, A. I. Khan, and S. Yu, "Exploring Argon plasma effect on ferroelectric  $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$  thin film atomic layer deposition," *Journal of Materials Research*, vol. 36, pp. 1206-1213, 2021. 
- L.A. Hymel, M.E. Ogle, S.E. Anderson, C.L. San Emeterio, T.C. Turner, W.Y. York, A.Y. Liu, C.E. Olingy, S. Sridhar, H.S. Lim, T. Sulchek, P. Qiu, Y.C. Jang, N.J. Willett, and E.A. Botchwey, "Modulating local S1P receptor signaling as a regenerative immunotherapy after volumetric muscle loss injury," *J Biomed Mater Res A*, vol. 109, no. 5, pp. 695-712, 2021.
- R. Ilhamsyah, J-M. D. Dimandja, and P. J. Hesketh, "Design and Analysis of Exhaled Breath Condenser System for Rapid Collection of Breath Condensate," *Journal of the Electrochemical Society*, vol. 168, p. 107502, 2021.
- Giada Innocenti, Daniel J Benkeser, Julia E Dase, Xenia Wirth, Carsten Sievers, and Kimberly E. Kurtis, "Beneficiation of ponded coal ash through chemi-mechanical grinding," *Fuel*, vol. 299, p. 120892, 2021.
- B. Insoe, H. Rathnayake, and Y. Mo, "Role of Charge Transfer in Halogen Bonding," *J. Phys. Chem. A*, vol. 125, no. 14, pp. 2944-2953, 2021. 
- I. Jahan, and L. Zhang, "Natural polymer-based electrospun nanofibrous membranes for wastewater treatment: A review," *Journal of Polymers and the Environment*, vol. 30, pp.1-21, 2021. 
- A. Jain, W. -J. Choi, Y. -Y. Huang, B. Klein, and A. Rohatgi, "Design, Optimization, and In-Depth Understanding of Front and Rear Junction Double-Side Passivated Contacts Solar Cells," *IEEE Journal of Photovoltaics*, vol. 11, no. 5, pp. 1141-1148, 2021.
- A. Janssen, V. Pawlik, A.D. von Rueden, L. Xu, Z. Lyu, M. Mavrikakis, and Y. Xia, "Facile synthesis of palladium-based nanocrystals with different crystal phases and a comparison of their catalytic properties," *Advanced Materials*, vol. 33, no. 49, p. 2103801, 2021. 
- Y. Jeon, Y. Wu, Y. Zhang, C. Hwang, H.-W. Lee, H.-K. Song, and N. Liu, "In situ visualization of zinc plating in gel polymer electrolyte," *Electrochimica Acta*, vol. 391, p. 138877, 2021. 
- S. Jhulki, C. H. Feriante, R. Mysyk, A. M. Evans, A. Magasinski, A. S. Raman, K. Turcheniuk, S. Barlow, W. R. Dichtel, G. Yushin, and S. R. Marder, "A Naphthalene Diimide Covalent Organic Framework: Comparison of Cathode Performance in Lithium-Ion Batterie with Amorphous Cross-linked and Linear Analogues, and Its Use in Aqueous Lithium-Ion Batteries," *ACS Applied Energy Materials*, vol. 4, no. 1, pp. 350-356, 2021.
- Y. Ji, S. Waters, E. Lim, A. W. Lang, P. N. Ciesielski, M. L. Shofner, J. R. Reynolds, and J. C. Meredith, "Minimizing Oxygen Permeability in Chitin/Cellulose Nanomaterial Coatings by Tuning Chitin Deacetylation," *ACS Sustainable Chem. Eng.* 2022, vol. 10, no. 1, pp. 124-133, 2021. 
- G. Jian, Y. Jiao, Q. Meng, Y. Guo, F. Wang, J. Zhang, C. Wang, K.-S. Moon, C.-P. Wong, "Excellent high-temperature piezoelectric energy harvesting properties in flexible polyimide/3D  $\text{PbTiO}_3$  flower composites," *Nano Energy*, vol. 82, p. 105778, 2021. 
- Chen Jiang, Kan Wang, Yi Liu, Chuck Zhang, and Ben Wang, "Application of Textile Technology in Tissue Engineering: A review," *Acta Biomaterialia*, vol. 128, pp. 60-76, 2021.
- Chen Jiang, Kan Wang, Yi Liu, Chuck Zhang, and Ben Wang, "Textile-based sandwich scaffold using wet electrospun yarns for skin tissue engineering," *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 119, p. 104499, 2021.







- Chen Jiang, Kan Wang, Yi Liu, Chuck Zhang, and Ben Wang, "Using Wet Electrospun PCL/Gelatin/CNT Yarns to Fabricate Textile-Based Scaffolds for Vascular Tissue Engineering," *ACS Biomaterials Science & Engineering*, vol. 7, no. 6, pp. 2627–2637, 2021.
- K. S. Jiang and R. A. Gerhardt, "Fabrication and Supercapacitor Applications of Multiwall Carbon Nanotube Thin Films," *Journal of Carbon Research*, vol. 7, no. 4, p. 70, 2021.
- P. Jing, K. Liu, L. Soule, J. Wang, T. Li, B. Zhao, and M. Liu, "Engineering the architecture and oxygen deficiency of T-Nb<sub>2</sub>O<sub>5</sub>-carbon-graphene composite for high-rate lithium-ion batteries," *Nano Energy*, vol. 89, p. 106398, 2021.
- J. N. Jocz, Y. Lyu, B. J. Hare, and C. Sievers, "Characterization of Surface Species during Benzene Hydroxylation over a NiO-Ceria-Zirconia Catalyst," *Langmuir*, vol. 38, no. 1, pp. 458-471, 2021. 
- S. Johnson, R. Pokharel, M. Lowe, H. Kuchoor, S. Nalamati, K. Davis, H. Rathnayake, and S. Iyer, "Study of patterned GaAsSbN nanowires using sigmoidal model," *Scientific Reports*, vol. 11, p. 4651, 2021. 
- E. Jost, J. C. Miers, A. Robbins, D. G. Moore, and C. Saldana, "Effects of Spatial Energy Distribution-Induced Porosity on Mechanical Properties of Laser Powder Bed Fusion 316L Stainless Steel," *Additive Manufacturing*, vol. 39, p. 101875, 2021.
- E. W. Jost, D. G. Moore, and C. Saldana, "Evolution of global and local deformation in additively manufactured octet truss lattice structures," *Additive Manufacturing Letters*, vol. 1, p.100010, 2021.
- Haesung Jung, Collin Snyder, Wenqian Xu, Ke Wen, Mengqiang Zhu, Yan Li, Anhuai Lu, and Yuanzhi Tang, "Photocatalytic oxidation of dissolved Mn<sup>2+</sup> by TiO<sub>2</sub> and the formation of tunnel structured manganese oxides," *ACS Earth and Space Chemistry*, vol. 5, no. 8, pp. 2105–2114, 2021.
- Haesung Jung, Xiaoming Xu, Biao Wan, Qian Wang, Olaf Borkiewicz, Yan Li, Hailong Chen, Anhuai Lu, and Yuanzhi Tang, "Mineral catalyzed photochemical formation of manganese oxides," *Geochemica et Cosmochimica Acta.*, vol. 312, pp. 343-356, 2021.
- J. Kacher, Y. Xie, S. P. Voigt, S. Zhu, H. Yuchi, J. Key, and S. R. Kalidindi, "In situ transmission electron microscopy: Signal processing challenges and examples," *IEEE Signal Processing Magazine*, vol. 39, no. 1, pp. 89-103, 2021.
- S. Kang, G. M. Biesold, H. Lee, D. Bukharina, Z. Lin, and V. V. Tsukruk, "Dynamic Chiro-Optics of Bio-Inorganic Nanomaterials via Seamless Co-Assembly of Semiconducting Nanorods and Polysaccharide Nanocrystals," vol. 31, no. 42, p. 2104596, 2021. 
- Z. M. Karimi and J. A. Davis, "Permittivity Characterization of Dielectric Surfaces Using Nanofabricated In-Plane Capacitors," *IEEE Transactions on Electron Devices*, vol. 68, no. 8, pp. 4033-4038, 2021. 
- S.R. Karnati, D. Oldham, E. H. Fini, and L. Zhang, "Surface functionalization of silica nanoparticles with swine manure-derived bio-binder to enhance bitumen performance in road pavement," *Construction and Building Materials*, vol. 266, pp. 121000, 2021.
- C. Kepley, M. Ferrydouni, M. Motaghed, and K. Dellinger, "IgE receptor-activated human mast cells have potent anti-cancer properties," *Cancer Research*, vol. 81, pp. 1494-1494, 2021.
- J.W. Key and J. Kacher, "Establishing first order correlations between pitting corrosion initiation and local microstructure in AA5083 using automated image analysis," *Materials Characterization*, vol. 178, no. 1, p.111237, 2021.
- F. S. T. Khan, A. L. Waldbusser, M. C. Carrasco, H. Pourhadi, and S. Hematian, "Synthetic, Spectroscopic, Structural, and Electrochemical Investigations of Ferricenium Derivatives with Weakly Coordinating



- Anions: Ion Pairing, Substituent, and Solvent Effects”, *Dalton Transactions*, vol. 50, pp. 7433-7455, 2021.
- S. Khan, B. Burciu, C. D. Filipe, Y. Li, K. Dellinger, and T.F. Didar, “DNAzyme-Based Biosensors: Immobilization Strategies, Applications, and Future Prospective,” *ACS Nano*, vol. 15, pp. 13943-13969, 2021.
- S. Khan, J. Chavez, X. Zhu, N. H. Chiu, W. Zhang, Z. Yin, J. Han, J. Yang, R. Sigler, S. Tian, H. Zhu, Y. Li, J. Wei, X. Yi, and Z. Jia, “Carbon Nanodots Inhibit Oxidized Low Density Lipoprotein-Induced Injury and Monocyte Adhesion to Endothelial Cells Through Scavenging Reactive Oxygen Species”, *Journal of Biomedical Nanotechnology*, vol. 17, pp. 1654-1667, 2021.
- C. Kim, D. Brown, M.-g. Kim, W.P. Taylor, H. Wong, and O. Brand, "Amine-Functionalized Capacitive Carbon Dioxide Sensor Performance as a Function of Temperature and Sensing Film Thickness," *IEEE Sensors Journal*, vol. 21, no. 13, pp. 14645-14654, 2021. 
- H. Kim, Y. Kim, M. Mahmood, S. Kwon, F. Epps, Y. Rim, and W. H. Yeo, "Wireless, Continuous Monitoring of Daily Stress and Management Practice via Soft Nanomembrane Bioelectronics," *Biosensors & Bioelectronics*, vol. 173, p. 112764, 2021. 
- H. Kim, S. Kwon, Y. Kwon, and W. H. Yeo, "Soft Wireless Bioelectronics and Differential Electrodermal Activity for Home Sleep Monitoring," *Sensors*, vol. 21, no. 2, p. 354, 2021. 
- H. Kim, Y. Kwon, C. Zhu, F. Wu, S. Kwon, W. H. Yeo, and H. Choo, "Real-time functional assay of volumetric muscle loss injured mouse masseter muscles via nanomembrane electronics," *Advanced Science*, vol. 8, no. 17, p. 2101037, 2021. 
- J. Kim, D. M. Francis, and S. N. Thomas, “In situ crosslinking depot formulation for controlled release of immune checkpoint inhibitor antibodies,” *Nanomaterials*, vol. 11, no. 2, p. 471, 2021.
- J. H. Kim, M. Liu, Y. Chen, R. Murphy, Y. M. Choi, Y. Liu, and M. Liu, “Understanding the Impact of Sulfur Poisoning on the Methane-Reforming Activity of a Solid Oxide Fuel Cell Anode,” *ACS Catalysis*, vol. 11, no. 21, pp. 13556-13566, 2021.
- J. H. Kim, S. Yoo, R. Murphy, Y. Chen, Y. Ding, K. Pei, B. Zhao, G. Kim, Y. M. Choi, and M. Liu, “Promotion of oxygen reduction reaction on a double perovskite electrode by a water-induced surface modification,” *Energy & Environmental Science*, vol. 14, no. 3, pp. 1506-1516, 2021.
- M. Kim, H. Lee, M. C. Krecker, D. Bukharina, D. Nepal, T. J. Bunning, and V. V. Tsukruk, “Switchable Photonic Bio-Adhesive Materials,” *Advanced Materials*, vol. 33, no. 42, p. 2103674, 2021. 
- M. Kim, K. Pierce, M. Krecker, D. Bukharina, K. Adstedt, D. Nepal, T. Bunning, V. V. Tsukruk, “Monolithic Chiral Nematic Organization of Cellulose Nanocrystals under Capillary Confinement,” *ACS Nano*, vol. 15, no. 12, pp. 19418-19429, 2021. 
- Y. C. Kim, J. W. Lee, E. S. Esser, H. Kalluri, J. C. Joyce, R. W. Compans, I. Skountzou, and M. R. Prausnitz, “Fabrication of microneedle patches with lyophilized influenza vaccine suspended in organic solvent,” *Drug Delivery & Translational Research*, vol. 11, pp. 692-701, 2021.
- M. H. Kirmani, G. Sachdeva, R. Pandey, G. Odegard, R. Liang, and S. Kumar, “Cure behavior changes and compression of carbon nanotubes in aerospace grade bismaleimide-carbon nanotube sheet nanocomposites,” *ACS App. Nano Mater.*, vol. 4, no. 3, p. 2476-2485, 2021. 
- S.L. Knowles, C. D. Roberts, M. Augustinović, L. Flores-Bocanegra, H. A. Raja, K. N. Heath-Borrero, J. E. Burdette, J.O. Falkinham Iii, C.J. Pearce, and N.H. Oberlies, “Opportunities and Limitations for




- Assigning Relative Configurations of Antibacterial Bis lactones using GIAO NMR Shift Calculations”, *Journal of Natural Products*, vol. 84, pp. 1254–1260, 2021. 
- Y. R. Koh, M. S. B. Hoque, H. Ahmad, D. H. Olson, Z. Liu, J. Shi, W. Steven, K. Huynh, E. R. Hoglund, J. M. Howe, M. S. Goorsky, S. Graham, T. Luo, J. K. Hite, W. A. Doolittle, and P. E. Hopkins, “High thermal conductivity and thermal boundary conductance of homoepitaxially grown gallium nitride (GaN) films with thicknesses ranging from 0.25 to 2.1 mm,” *Physical Review Materials*, vol. 5, p. 104604, 2021.
- N. V. Kollu, and D.R. LaJeunesse, “Cell Rupture and Morphogenesis Control of the Dimorphic Yeast *Candida albicans* by Nanostructured Surfaces,” *ACS Omega*, vol. 6, pp.1361-1369, 2021. 
- Ravi Konjeti, Julia Allen, Stephan Turano, Mike Kranz, Brian English, and Jud Ready, “Development of Silicon-Embedded Supercapacitors Utilizing Atomic Layer Deposition and Plasma-Enhanced Chemical Vapor Deposition for Functionalization of Carbon Nanotube Electrodes,” *Journal of Electronic Materials*, vol. 50, pp. 5037–5048, 2021.
- K. D. Koube, T. Sloop, C. D. Stiers, H. Sim, and J. Kacher, “Fabrication of 3D printed complex concentrated alloys using oxide precursors,” *Additive Manufacturing Letters*, vol. 1, p. 100015, 2021. 
- X. Kuang, S. Wu, Q. Ze, L. Yue, Y. Jin, S. M. Montgomery, F. Yang, H. J. Qi, and R. Zhao, “Magnetic Dynamic Polymers for Modular Assembling and Reconfigurable Morphing Architectures,” *Advanced Materials*, vol. 33, no. 30, p. 2102113, 2021. 
- S. Kwon, H. Kim, and W. H. Yeo, "Recent Advances in Wearable Sensors and Portable Electronics for Sleep Monitoring,” *iScience*, vol. 24, no. 5, p. 102461, 2021.
- A. W. Lang, Y. Ji, A. C. Dillon, C. C. Satam, J. C. Meredith, and J. R. Reynolds, “Photostability of Ambient-Processed, Conjugated Polymer Electrochromic Devices Encapsulated by Bioderived Barrier Films,” *ACS Sustainable Chemistry & Engineering*, vol. 9, pp. 2937-2945, 2021.
- F. A. Larrain, C. Fuentes-Hernandez, Y.-C. Chang, V. A. Rodriguez-Toro, S. Abraham, and B. Kippelen, “Increasing Volume in Conjugated Polymers to Facilitate Electrical Doping with Phosphomolybdic Acid,” *ACS Appl. Mater. Interfaces*, vol. 13, no. 19, pp. 23260-23267, 2021. 
- B. Lee, K. Lee, M. Li, S. Noda, and S. W. Lee, “Two-Dimensional Polydopamine Positive Electrode for High-Capacity Alkali Metal Ion Storage,” *ChemElectroChem*, vol. 8, no. 6, pp. 1070-1077, 2021. 
- C. Lee, S. Y. Han, J. A. Lewis, P. P. Shetty, D. Yeh, Y. Liu, E. Klein, H.-W. Lee, and M. T. McDowell, “Stack Pressure Measurements to Probe the Evolution of the Lithium-Solid-State Electrolyte Interface,” *ACS Energy Letters*, vol. 6, pp. 3261-3269, 2021.
- D. Lee, C. H. Chu, and A. F. Sarioglu, “Point-of-Care Toolkit for Multiplex Molecular Diagnosis of SARS-CoV-2 and Influenza A and B Viruses,” *ACS Sensors*, vol. 6, no. 9, pp. 3204-3213, 2021.
- D. Lee, T. Ozkaya-Ahmadov, C. H. Chu, M. Boya, R. Liu, and A. F. Sarioglu, “Capillary flow control in lateral flow assays via delaminating timers,” *Science Advances*, vol. 7, no. 40, 2021.
- M. J. Lee, K. Lee, J. Lim, M. Li, S. Noda, S. J. Kwon, B. DeMattia, B. Lee, and S. W. Lee, “Outstanding Low-Temperature Performance of Structure-Controlled Graphene Anode Based on Surface-Controlled Charge Storage Mechanism,” *Advanced Functional Materials*, p. 2009397, 2021.
- S. Lee, Y. Kim, and W. H. Yeo, "Advances in Microsensors and Wearable Bioelectronics for Digital Stethoscopes in Health Monitoring and Disease Diagnosis,” *Advanced Healthcare Materials*, vol. 10, no. 10, p. 2101400, 2021.










- S. R. Lee, E. Reichmanis, and M. Srinivasaro, "Anisotropic Responsive Microgels Based on the Cholesteric Phase of Chitin Nanocrystals," *ACS Macro Lett.*, vol. 11, no. 1, pp. 92-102, 2021. 
- Y. Lee, W. Li, J. Tang, S.P. Schwendeman, and M.R. Prausnitz, "Immediate detachment of microneedles by interfacial fracture for sustained delivery of a contraceptive hormone in the skin," *Journal of Controlled Release*, vol. 337, pp. 676-685, 2021.
- J. A. Lewis, F. J. Q. Cortes, Y. Liu, J. C. Miers, A. Verma, B. S. Vishnugopi, J. Tippens, D. Prakash, T. S. Marchese, S. Y. Han, C. Lee, P. P. Shetty, H.-W. Lee, P. Shevchenko, F. De Carlo, C. Saldana, P. P. Mukherjee, and M. T. McDowell, "Linking Void and Interphase Evolution to Electrochemistry in Solid-State Batteries Using Operando X-Ray Tomography," *Nature Materials*, vol. 20, pp. 503-510, 2021.
- J. Li, C. Ren, Z. Sun, Y. Ren, H. Lee, K.-S. Moon, and C. -P. Wong, "Melt Processable Novolac Cyanate Ester/Biphenyl Epoxy Copolymer Series with Ultrahigh Glass-Transition Temperature," *ACS Applied Materials & Interfaces*, vol. 13, no. 13, pp. 15551-15562, 2021. 
- M.-J. Li and M. S. Bakir, "3-D Integrated Chiplet Encapsulation (3-D ICE): High-Density Heterogeneous Integration Using SiO<sub>2</sub>-Reconstituted Tiers," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 12, pp. 2242-2245, 2021. 
- Meng Li, Bin Hua, Lu-Cun Wang, Joshua D. Sugar, Wei Wu, Yong Ding, Ju Li, and Dong Ding, "Switching of metal-oxygen hybridization for selective CO<sub>2</sub> electrohydrogenation under mild temperature and pressure," *Nature Catalysis*, vol. 4, no. 4, pp. 274-283, 2021.
- S. Li, K. Hart, N. Norton, C. A. Ryan, L. Guglani, and M. R. Prausnitz, "Administration of pilocarpine by microneedle patch as a novel method for cystic fibrosis sweat testing," *Bioengineering & Translational Medicine* p. 10222, 2021.
- Y. Li and J.A. Champion, "Photocrosslinked, Tunable Protein Vesicles for Drug Delivery Applications," *Adv. Healthcare Mater*, vol. 10, no. 15, p. 2001810, 2021. 
- Y. Li, X. Lin, F. Ma, and Y. Mo, "Computational Study of CO<sub>2</sub> Reduction Catalyzed by Iron(I) Complex at Different Spin States: Cooperativity of Hydrogen Bonding and Auxiliary Group Effect", *ACS Omega*, vol. 6, pp. 31971-31981, 2021. 
- Y. Li and M. D. Losego, "Impact of trimethylaluminum exposure time on the mechanical properties of single-cycle atomic layer deposition modified cellulosic nanopaper," *J. Vac. Sci. Technol. A.*, vol. 39, no. 5, p. 052407, 2021. 
- Y. Li, J. P. Wooding, E. K. McGuinness, Y. Sun, and M. D. Losego, "Thermally stimulated wettability transformations on one-cycle atomic layer deposition-coated cellulosic paper: Applications for droplet manipulation and heat patterned paper fluidics," *ACS Appl. Mater. Interfaces*, vol. 13, no. 11, p. 13802, 2021. 
- S. Liang, M. Zhang, Y. He, Z. Kang, M. Tian, M. Zhang, H. Miao, and Z. Lin, "Polymer-ligated uniform lead chalcogenide nanoparticles with tunable size and robust stability enabled by judiciously designed surface chemistry," *Chemistry of Materials*, vol. 33, no. 17, pp. 6701-6712, 2021.
- J. Liao, K. A. Pham, and V. Breedveld, "Dewatering Cellulose Nanomaterial Suspensions and Preparing Concentrated Polymer Composite Gels via Reverse Dialysis," *ASC Sustainable Chem. Eng.*, vol. 9, no. 29, pp.9671-9679, 2021. 





- H. Lim, Y. Lee, K. Jones, Y. Kwon, S. Kwon, M. Mahmood, and W. H. Yeo, "All-in-One, Wireless, Fully Flexible Sodium Sensor System with Integrated Au/CNT/Au Nanocomposites," *Sensors and Actuators B: Chemical*, vol. 331, p. 129416, 2021.
- H. Lim, S. Lee, M. Mahmood, S. Kwon, Y. Kim, and W. H. Yeo, "Development of Flexible Ion-Selective Electrodes for Saliva Sodium Detection," *Sensors*, vol. 21, no. 5, p. 1641, 2021.
- J. Lim, C. Y. Liu, J. Park, Y. H. Liu, T. P. Senftle, S. W. Lee, and M. C. Hatzell, "Structure Sensitivity of Pd Facets for Enhanced Electrochemical Nitrate Reduction to Ammonia," *ACS Catalysis*, vol. 11, no. 12, pp.7568-7577, 2021.
- X. Lin and Y. Mo, "Resonance-Assisted but Anti-Electrostatic Intramolecular Au $\cdots$ H-O Hydrogen Bonding in Gold(I) Complexes: A Computational Verification", *Inorganic Chemistry*, vol. 60, pp. 460-467, 2021.
- Fobang Liu, Nga Lee Ng, and Hang Lu, "Emerging applications of microfluidic techniques for in vitro toxicity studies of atmospheric particulate matter," *Aerosol Science and Technology*, vol. 55, no. 6, pp. 623-639, 2021.
- H. Liu, Y. Xie, J. Li, Z. Sun, J. Liu, K.-S Moon, L. Lu, Y. Chen, Y. Tang, X. Chen, and C. -P. Wong, "Laser-induced nitrogen-self-doped graphite nanofibers from cyanate ester for on-chip micro-supercapacitors," *Chemical Engineering Journal*, vol. 404, p. 126375, 2021. 
- Huitian Liu, Yamin Zhang, Chao Wang, Jacqueline N. Glazer, Zhongqiang Shan, and Nian Liu, "Understanding and Controlling the Nucleation and Growth of Zn Electrodeposits for Aqueous Zinc-Ion Batteries," *ACS Appl. Mater. Interfaces*, vol. 13, no. 28, pp. 32930–32936, 2021. 
- J. Liu, R. Toy, C. Vantucci, P. Pradhan, Z. Zhang, K. Kuo, K. Kubelick, D. Huo, J. Wen, J. Kim, Z. Lyu, S. Dhal, A. Atalis, S. Ghosh-Choudhary, E.J. Devereaux, J. Gumbart, Y. Xia, S. Emelianov, N. Willett, and K. Roy, "Bifunctional Janus particles as multivalent synthetic nanoparticle-antibodies (SNAbs) for selective depletion of target cells," *Nano Letters*, vol. 21, no. 1, pp. 875-886, 2021. 
- M. Liu, S. Jhulki, Z. Sun, A. Magasinski, C. Hendrix, and G. Yushin, "Atom-Economic Synthesis of Magnéli Phase Ti<sub>4</sub>O<sub>7</sub> Microspheres for Improved Sulfur Cathodes for Li-S Batteries," *Nano Energy*, vol. 79, p.105428, 2021.
- M. Liu, Z. Lyu, Y. Zhang, R. Chen, M. Xie, and Y. Xia, "Twin-directed deposition of Pt on Pd icosahedral nanocrystals for catalysts with enhanced activity and durability toward oxygen reduction," *Nano Letters*, vol. 21, no. 5, pp. 2248-2254, 2021. 
- S. Liu, X. Tong, Y. Chen, and J. Crittenden, "Forward solute transport in forward osmosis using a freestanding graphene oxide membrane," *Environmental Science & Technology*, vol. 55, no. 9, pp. 6290-6298, 2021. 
- S. Liu, X. Tong, S. Liu, D. An, J. Yan, Y. Chen, and J. Crittenden, "Multi-functional tannic acid (TA)-Ferric complex coating for forward osmosis membrane with enhanced micropollutant removal and antifouling property," *Journal of Membrane Science*, vol. 626, p. 119171, 2021. 
- Y. Liu, Z. Chen, W. Qiu, G. Liu, M. Eddaoudi, and W. J. Koros, "Penetrant competition and plasticization in membranes: How negatives can be positives in natural gas sweetening," *Journal of Membrane Science*, vol. 627, p. 119201, 2021.
- Y. Liu, Z. Liu, B. E. Kraftschik, V. P. Babu, N. Bhuwania, D. Chinn, and W. J. Koros, "Natural gas sweetening using TEGMC polyimide hollow fiber membranes," *Journal of Membrane Science*, vol. 632, p. 119361, 2021.









- Zhaonan Liu, Jialei Chen, Kan Wang, Ben Wang, and Chuck Zhang, "Current status and opportunities in adaptive data analysis for therapeutic cell manufacturing," *Current Opinion in Biomedical Engineering*, vol. 20, p. 100351, 2021.
- Z. Liu, W. Qiu, W. Quan, Y. Liu, and W. J. Koros, "Fine-tuned thermally cross-linkable 6FDA-based polyimide membranes for aggressive natural gas separation," *Journal of Membrane Science*, vol. 635, p. 119474, 2021.
- Z. Liu, D. Zhu, L. Raju, and W. Cai, "Tackling photonic inverse design with machine learning," *Advanced Science*, vol. 8, no. 5, p. 2002923, 2021.
- Zixiang Leonardo Liu, Christopher Bresette, Cyrus K. Aidun, and David N. Ku, "SIPA in 10 milliseconds: VWF tentacles agglomerate and capture platelets under high shear," *Blood Advances*, 2021.
- S. F. Lombardo, M. Tian, K. Chae, J. Hur, N. Tasneem, S. Yu, K. Cho, A. C. Kummel, J. Kacher, and A. I. Khan, "Local epitaxial-like templating effects and grain size distribution in atomic layer deposited  $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$  thin film ferroelectric capacitors," *Appl. Phys. Lett.*, vol. 119, p. 092901, 2021. 
- D. Lou, T. Grablander, H. Hong, and G P. Peterson, "Improved Thermal Conductivity of PEG Based Fluids Using Hydrogen Bonding and Long Chain of Nanoparticle," *J. of Nanoparticle Research*, vol. 23, no. 24, pp. 1-5, 2021.
- L. Lu, T. R. Kurfess, and C. Saldana, "Effects of extrinsic noise factors on machine learning based chatter detection in machining," *ASTM Journal of Smart and Sustainable Manufacturing*, 2021, Vol 5, pp. 167-180, 2021.
- M. Lu, P. J. Arias-Monje, J. Ramachandran, P. Gulgunje, Jeffrey Luo, M. H. Kirmani, C. Meredith, and S. Kumar, "Stabilization of polyacrylonitrile fibers with carbon nanotubes," *Polymer Degradation and Stability*, vol. 188, p. 109567, 2021.
- M. Lu, Jianshan Liao, P. V. Gulgunje, H. Chang, P. J. Arias-Monje, J. Ramachandran, V. Breedveld, and S. Kumar, "Rheological behavior and fiber spinning of polyacrylonitrile (PAN)/carbon nanotube (CNT) dispersions at high CNT loading," *Polymer*, vol. 215, p. 123369, 2021.
- M. Lu, J. Xu, P. J. Arias-Monje, P. V. Gulgunje, K. Gupta, N. Shirolkar, A. P. Maffe, E. DiLoreto, J. Ramachandran, Y. Sahoo, S. Agarwal, C. Meredith, and S. Kumar, "Continuous Stabilization of Polyacrylonitrile – Carbon nanotube Fibers by Joule Heating," *Chemical Engineering Science*, vol. 236, p. 116495, 2021.
- C. Luo, M. Sadhasivan, J. Kim, V. K. Sharma, and C. -H. Huang, "Revelation of Fe(VI)-ABTS System: Stopped-Flow Kinetic Investigation of Fe(V)/Fe(IV) Involvement," *Environmental Science & Technology*, vol. 55, no. 6, pp. 3976-3987, 2021.
- S. Luo, F. Wu, and G. Yushin, "Strategies for Fabrication, Confinement and Performance Boost of  $\text{Li}_2\text{S}$  in Lithium-Sulfur, Silicon-Sulfur & Related Batteries," *Materials Today*, vol. 49, pp. 253-270, 2021.
- A. Lupinacci, J. Kacher, A. Shapiro, P. Hosemann, and A. Minor, "Cryogenic in-situ clamped beam testing of Sn96," *Journal Materials Research*, vol. 36, pp. 1751-176, 2021.
- Y. Lyu, J. N. Jocz, R. Xu, O. C Williams, and C. Sievers, "Selective Oxidation of Methane to Methanol over Ceria-Zirconia Supported Mono and Bimetallic Transition Metal Oxide Catalysts," *ChemCatChem*, vol. 13, no. 12, pp. 2832-2842, 2021. 
- Z. Lyu, S. Zhu, M. Xie, Y. Zhang, Z. Chen, R. Chen, M. Tian, M. Chi, M. Shao, and Y. Xia, "Controlling the surface oxidation of Cu nanowires improves their catalytic selectivity and stability toward  $\text{C}_{2+}$  products in  $\text{CO}_2$  reduction," *Angewandte Chemie International Edition*, vol. 60, pp. 1909-1915, 2021.

- Z. Lyu, S. Zhu, L. Xu, Z. Chen, Y. Zhang, M. Xie, T. Li, S. Zhou, J. Liu, M. Chi, M. Shao, M. Mavrikakis, and Y. Xia, "Kinetically-controlled synthesis of Pd-Cu Janus nanocrystals with enriched surface structures and enhanced catalytic activities toward CO<sub>2</sub> reduction," *Journal of the American Chemical Society*, vol. 143, pp. 149-162, 2021.
- W. Lv and J.A. Champion, "Demonstration of intracellular trafficking, cytosolic bioavailability, and target manipulation of an antibody delivery platform," *Nanomedicine: Nanotechnology, Biology, and Medicine*, vol. 32, pp. 102315-102331, 2021.
- Y. Ma, N. C. Bruno, F. Zhang, M. G. Finn, and R. P. Lively, "Zeolite-like performance for xylene isomer purification using polymer-derived carbon membranes," *Proc. Natl. Acad. Sci. USA*, vol. 118, p. e2022202118, 2021.
- Keeya Madani, A. Rohatgi, B. Rounsaville, M. -G. Kang, H. -E. Song, and Y. -W. Ok, "Enhanced Stability of Exposed PECVD Grown Thin n+ Poly-Si/SiO<sub>x</sub> Passivating Contacts With Al<sub>2</sub>O<sub>3</sub> Capping Layer During High Temperature Firing," *IEEE Journal of Photovoltaics*, vol. 11, no. 2, pp. 268-272, 2021.
- M. Mahmood, S. Kwon, H. Kim, Y. Kim, P. Siriaraya, J. Choi, B. Otkhmezuri, K. Kang, K. Yu, Y. Jang, C. Ang, and W. H. Yeo, "Wireless Soft Scalp Electronics and Virtual Reality System for Motor Imagery-based Brain-Machine Interfaces," *Advanced Science*, vol. 8, no. 19, p. 2101129, 2021.
- A. Malhotra, G. Tutuncuoglu, S. Kommandur, P. Creamer, A. Rajan, A. Mohabir, S. Yee, M. A. Filler, and M. Maldovan, "Impact of Porosity and Boundary Scattering on Thermal Transport in Diameter-Modulated Nanowires," *ACS Appl. Mater. Interfaces*, vol. 14, no. 1, pp. 1740-1746, 2021. 
- S. Mantripragada, D. Deng, and L Zhang, "Remediation of GenX from water by amidoxime surface-functionalized electrospun polyacrylonitrile nanofibrous adsorbent," *Chemosphere*, vol. 283, pp.131235, 2021.
- M. A. Marks, K. Kalaitzidou, and W. R. Gutekunst, "Synthesis and Characterization of Cationic Dendrimer-PDMS Hybrids," *Macromolecular rapid communications*, vol. 42, no. 8, p. 2000652, 2021.
- M. Matherne, C. Dowell-Esquivel, O. Howington, O. Lenaghan, G. Steinbach, P. J. Yunker, and D. L. Hu, "Biomechanics of pollen pellet removal by the honey bee," *Journal of the Royal Society Interface*, vol. 18, no. 181, p. 20210549, 2021.
- Xiangdong Meng, Qian Wang, Biao Wan, Jie Xu, Qunxing Huang, Jianhua Yan, and Yuanzhi Tang, "Transformation of Phosphorus during Low Temperature Co-combustion of Sewage Sludge with Biowastes," *ACS Sustainable Chemistry & Engineering*, vol. 9, no. 10, pp. 3668-3676, 2021.
- I. C. Miller, A. Zamat, L.-K. Sun, H. Phuengkham, A. M. Harris, L. Gamboa, J. Yang, J. P. Murad, S. J. Priceman, and G. A. Kwong, "Enhanced intratumoural activity of CAR T cells engineered to produce immunomodulators under photothermal control," *Nature Biomedical Engineering*, vol. 5, pp. 1348-1359, 2021. 
- Kwan Hong Min, Jeong-Mo Hwang, Eunwan Cho, Hee-eun Song, Sungeun Park, Ajeet Rohatgi, Donghwan Kim, et al, "Analysis of the negative charges injected into a SiO<sub>2</sub>/SiN<sub>x</sub> stack using plasma charging technology for field-effect passivation on a boron-doped silicon surface," *Progress in Photovoltaics: Research and Applications*, vol. 29, no. 1, pp. 54-63, 2021.
- Amar T. Mohabir, Daniel Aziz, Amy C. Brummer, Kathleen E. Taylor, Eric M. Vogel, and Michael A. Filler, "Bottom-up Nanoscale Patterning and Selective Deposition on Silicon Nanowires," *Nanotechnology*, vol. 33, no. 10, p. 105604, 2021. 



- N. Mohammad, R. Y. Abrokwah, R. G. Stevens-Boyd, S. Aravamudhan, and D. Kuila, "Fischer-Tropsch studies in a 3D-printed stainless steel microchannel microreactor coated with cobalt-based bimetallic-MCM-41 catalysts," *Catalysis Today*, vol. 358, pp. 303-315, 2021.
- N. Mohammad, C. Chukwudoro, S. Bepari, O. Basha, S. Aravamudhan, and D. Kuila, "Scale-up of High-Pressure FT Synthesis in 3D Printed Stainless Steel Microchannel Microreactors: Experiments and Modeling," *Catalysis Today*. Available online, 2021. 
- G. G. Morbioli, N. C. Speller, M. E. Cato, and A. M. Stockton, "An automated low-cost modular hardware and software platform for versatile programmable microfluidic device testing and development," *Sensors and Actuators B: Chemical*, vol. 346, p. 130538, 2021. 
- N. P. Mortensen, M. M. Caffaro, S. Aravamudhan, L. Beeravalli, S. Prattipati, R. W. Snyder, S. L. Watson, P. R. Patel, F. X. Weber, S. A. Montgomery, S. J. Sumner, and T. R. Fennell, "Simulated Gastric Digestion and In Vivo Intestinal Uptake of Orally Administered CuO Nanoparticles and TiO<sub>2</sub> E171 in Male and Female Rat Pups," *Nanomaterials*, vol. 1, no. 6, p. 1487, 2021. 
- N. P. Mortensen, M. M. Caffaro, P. R. Patel, R. W. Snyder, S. L. Watson, S. Aravamudhan, S. A. Montgomery, T. Lefever, S. J. Sumner, and T. R. Fennell, "Biodistribution, cardiac and neurobehavioral assessments, and neurotransmitter quantification in juvenile rats following oral administration of aluminum oxide nanoparticles," *Journal of Applied Toxicology*, vol. 41, no. 8, pp. 1316-1329, 2021. 
- M. Motaghd, C. Kepley, K. Dellinger, M. Fereydouni, and E. Ahani, "Transfection of human adipose-derived mast cells: a characteristic study using different chemical reagents," *Journal for Immunotherapy of Cancer*, vol. 9, pp. A233-A233, 2021.
- P. Mukherjee, and M. T. McDowell, "Linking Void and Interphase Evolution to Electrochemistry in Solid-State Batteries Using Operando X-Ray Tomography," *Nature Materials*, vol. 20, pp. 503-510, 2021.
- R.L. Muhlbauer and R.A. Gerhardt, "Impedance Spectroscopy of Short Multiwalled Carbon Nanotube Networks Deposited on a Paper Substrate: Tracking the Evolution of In-Plane and Thru-Plane Electronic Properties," *Journal of Materials Science*, vol. 56, no. 4, pp. 3256-3267, 2021.
- S. Munkaila, J. Bentley, K. Schimmel, T. Ahamad, S. M. Alshehri, and B.P. Bastakoti, "Polymer directed synthesis of NiO nanoflowers to remove pollutant from wastewater," *Journal of Molecular Liquids*, vol. 324, pp. 114676, 2021. 
- M. Nazemi, S. R. Panikkanvalappil, C.-K. Liao, M.A. Mahmoud, and M. A. El-Sayed, "Role of Femtosecond Pulsed Laser-Induced Atomic Redistribution in Bimetallic Au-Pd Nanorods on Optoelectronic and Catalytic Properties," *ACS Nano*, vol. 15, no. 6, pp. 10241-10252, 2021. 
- M. R. Nelson, D. Ghoshal, J. C. Mejías, D. F. Rubio, E. Keith, and K. Roy, "A Multi-Niche Microvascularized Human Bone Marrow (hBM) On-A-Chip Elucidates Key Roles Of The Endosteal Niche In hBM Physiology," *Biomaterials*, vol. 270, p. 120683, 2021. 
- Y. Niu, Y. Zhou, W. Lv, Y. Chen, Y. Zhang, W. Zhang, Z. Luo, N. Kane, Y. Ding, L. Soule, Y. Liu, W. He, and M. Liu, "Enhancing Oxygen Reduction Activity and Cr Tolerance of Solid Oxide Fuel Cell Cathodes by a Multiphase Catalyst Coating," *Advanced Functional Materials*, vol. 31, no. 19, p. 2100034, 2021.
- G. K. O'Connor, H.R. Sayani, K.M. Cobb, A. R. Atwood, P. T. Grothe, S. Stevenson, T. Chen, J. Lynch-Stieglitz, M. A. Merrifield, G. A. Schmidt, J. K. Baum, D. Claar, and R. Walter, "Coral oxygen isotope



- records capture the 2015/16 El Niño event in the central equatorial Pacific,” *Geophys. Res. Lett.*, vol. 48, no. 24, p. e2021GL094036, 2021.
- O. Olatidoye, D. Thomas, and B. P. Bastakoti, “Facile synthesis of a mesoporous TiO<sub>2</sub> film templated by a block copolymer for photocatalytic applications,” *New Journal of Chemistry*, vol. 45, pp.15761-15766, 2021. 
- Seung-Joon Paik and A. Bruno Frazier, "Effects of COVID-19 on a CMOS Fabrication Course: An Integrated Design Experience," *Journal of the Society for Information Display*, 2021.
- S. Pan, J. Peng, and Z. Lin, "Large-Scale Rapid Positioning of Hierarchical Assemblies of Conjugated Polymers via Meniscus-Assisted Self-Assembly,” *Angewandte Chemie International Edition*, vol. 60, no. 21, pp. 11751-11757, 2021.
- M. Park, J. Wang, and A. Ansari, “High-Overtone Thin Film Ferroelectric AlScN-on-Silicon Composite Resonators,” *IEEE Electron Device Letters*, vol. 42, no. 6, pp. 911-914, 2021.
- S. J. Park, M. P. Bukhovko, and C. W. Jones, “Integrated Capture and Conversion of CO<sub>2</sub> into Methane Using NaNO<sub>3</sub>/MgO + Ru/Al<sub>2</sub>O<sub>3</sub> as a Catalytic Sorbent,” *Chem. Eng. J.*, vol. 420, no. 3, p. 130369, 2021. 
- Kai Pei, Yucun Zhou, Yong Ding, Kang Xu, Hua Zhang, Wei Yuan, Kotaro Sasaki, YongMan Choi, Meilin Liu, and Yu Chen, “An improved oxygen reduction reaction activity and CO<sub>2</sub>-tolerance of La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> achieved by a surface modification with barium cobaltite coatings,” *Journal of Power Sources*, vol. 514, p. 230573, 2021.
- A. Pital, J. Kim, and A. Stockton, “Colloid precipitation and interactions at a flowing solution-solution interface in confined geometries,” *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, vol. 629, p. 127431, 2021. 
- Elena Plis, et al., "Solar panel coverglass degradation due to the simulated GEO environment exposure," *Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imaging XXVII*, vol. 11727, p. 117270W, 2021.
- E. A. Plis, D. P. Engelhart, V. J. Murray, A. N. Sokolovskiy, D. A. Barton, D. C. Ferguson, and R. C. Hoffman, “Effect of simulated GEO environment on the properties of solar panel coverglasses,” *IEEE Transactions on Plasma Science*, vol. 49, no. 5, pp. 1679-1685, 2021.
- R. P. Pokhrel, J. Gordon, M.N. Fiddler, and S. Bililign, “Impact of combustion conditions on physical and morphological properties of biomass burning aerosol,” *Aerosol Science and Technology*, vol. 55, pp.80-91, 2021.
- R.P. Pokhrel, J. Gordon, M. N. Fiddler, and S. Bililign, “Determination of emission factors of pollutants from biomass burning of African fuels in laboratory measurements,” *Journal of Geophysical Research: Atmospheres*, vol. 126, pp. e2021JD034731, 2021.
- Daniel Porto, Yohei Matsunaga, Barbara Franke, Rhys Williams, Hiroshi Qadota, Olga Mayans, Guy M Benian, and Hang Lu, “Conformational changes in twitchin kinase in vivo revealed by FRET imaging of freely moving *C. elegans*,” *eLife*, p. 10:e66862, 2021. DOI: 10.7554/eLife.66862
- J. Qiu, J. Ahn, D. Qin, S. Thomopoulos, and Y. Xia, “Biomimetic Scaffolds with a Mineral Gradient and Funnel-Shaped Channels for Spatially Controllable Osteogenesis,” *Advanced Healthcare Materials*, p. 2100828, 2021. 






- J. Qiu, Z. Chen, M. Chi, and Y. Xia, "Swelling-induced symmetry breaking: A versatile approach to the scalable production of colloidal particles with a Janus structure," *Angewandte Chemie*, vol. 133, no. 23, pp. 13090-13094, 2021. 
- J. Qiu, Y. Shi, and Y. Xia, "Polydopamine nanobottles with photothermal capability for controlled release and related applications," *Advanced Materials*, vol. 33, no. 45, p. 2104729, 2021. 
- W. Qiu, J. E. Leisen, Z. Liu, W. Quan, and W. J. Koros, "Key Features of Polyimide-Derived Carbon Molecular Sieves," *Angewandte Chemie-International Edition*, vol. 60, no. 41, pp. 223-22331, 2021.
- W. Qiu, L. Xu, Liren, Z. Liu, Y. Liu, P. Arab, M. Brayden, M. Martinez, J. Liu, A. Roy, and W. J. Koros, "Surprising olefin/paraffin separation performance recovery of highly aged carbon molecular sieve hollow fiber membranes by a super-hyperaging treatment," *Journal of Membrane Science*, vol. 620, p. 118701, 2021.
- W. Quan, F. Zhang, B. L. Hamlett, M. G. Finn, C. W. Abney, S. C. Weston, R. P. Lively, and W. J. Koros, "CO<sub>2</sub> Capture Using PIM-1 Hollow Fiber Sorbents with Enhanced Performance by PEI Infusion," *Industrial & Engineering Chemistry Research*, vol. 60, no. 34, pp. 12709-12718, 2021.
- S. Kochupurackal Rajan, A. Kaul, T. E. Sarvey, G. S. May, and M. S. Bakir, "Monolithic Microfluidic Cooling of a Heterogeneous 2.5-D FPGA With Low-Profile 3-D Printed Manifolds," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 6, pp. 974-982, 2021. 
- J. Ramachandran, M. Lu, P. J. Arias-Monje, M. H. Kirmani, N. Shirolkar, and S. Kumar, "Towards designing strong porous carbon fibers through gel spinning of polymer blends," *Carbon*, vol. 173, pp. 724-735, 2021. 
- Arun Ramanathan, Johannes E. Liessen, and Henry S. La Pierre, "In-Plane Cation Ordering and Sodium Displacements in Layered Honeycomb Oxides with Tetravalent Lanthanides: Na<sub>2</sub>LnO<sub>3</sub> (Ln = Ce, Pr, and Tb)," *Inorganic Chemistry*, vol. 60, no. 3, pp. 1398-1410, 2021. 
- P. Ramaswamy, S. Devkota, R. Pokharel, S. Nalamati, F. Stevie, K. Jones, L. Reynolds, and S. Iyer, "A Study of Dopant Incorporation in Te - doped GaAsSb Nanowires using a Combination of XPS/UPS, and C-AFM/SKPM" *Scientific Reports*, vol. 11, pp. 8329, 2021. 
- Katily Ramirez, Shuya Kyu, Doan Nguyen, So-Yun Han, Ye Lim Lee, John Bradley, Troy Randall, Ignacio Sanz, Frances Eun-Hyung Lee, and Todd Sulchek, "Heterofunctional particles as single cell sensors to capture secreted immunoglobulins to isolate antigen-specific plasma cells," *Advanced Healthcare Materials*, vol. 10, no. 15, p. 2001947, 2021.
- S. G. Rao and J.D. Cressler, "A D-Band SiGe Power Amplifier with 4-Way Coupled Line Wilkinson Combiner," *IEEE Microwave and Wireless Components Letters*, vol. 31, no. 11, pp. 1239-1242, 2021.
- S. G. Rao, M. Frounchi, and J. D. Cressler, "Triaxial Balun with Inherent Harmonic Reflection for Millimeter-Wave Frequency Doublers," *IEEE Transactions on Microwave Theory and Techniques*, vol. 69, no. 6, pp. 2822-2831, 2021.
- H. Rathnayake, S. Saha, S. Dawood, S. Loeffler, and J. Starobin, "Analytical Approach to Screen Semiconducting MOFs Using Bloch Mode Analysis and Spectroscopic Measurements," *J. Phys. Chem. Lett.*, vol. 12, pp. 884-891, 2021. 
- H. Rathnayake, J. White, and S. Dawood, "Polysilsesquioxane-based organic-inorganic hybrid nanomaterials and their applications towards organic photovoltaics," *Synthetic Metals*, vol. 273, pp. 116705, 2021. 



- A. Rawal, K. L. Rhinehardt, R. V. Mohan, and M. Pendse, "Influence of Hydroxyproline on Mechanical Behavior of Collagen Mimetic Proteins Under Fraying Deformation—Molecular Dynamics Investigations," *Journal of Biomechanical Engineering*, vol.143, pp. 081009, 2021.
- L. Harshit Reddy, Shubham R. Pande, Tania Roy, Eric M. Vogel, Anjan Chakravorty, and Bhaswar Chakrabarti, "A SPICE compact model for forming-free, low-power graphene-insulator-graphene ReRAM technology," *Emergent Materials*, vol. 4, p. 1055, 2021.
- V. B. B. Reddy, I. C. Ume, J. Williamson, and S. K. Sitaraman, "Evaluation of the quality of BGA solder balls in FCBGA Packages Subjected to Thermal Cycling Reliability Test Using Laser Ultrasonic Inspection Technique," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 4, pp. 589-597, 2021.
- V. B. B. Reddy, J. Williamson, and S. K. Sitaraman, "Measurement Capability of Laser Ultrasonic Inspection System for Evaluation of Ball-Grid Array Package Solder Balls," *Journal of Microelectronics and Electronic Packaging*, vol. 18, no. 4, pp. 183-189, 2021.
- M. Ur Rehman, S. Ravichandran, A. O. Watanabe, S. Erdogan, and M. Swaminathan, "Characterization of ABF/Glass/ABF Substrates for mmWave Applications," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 3, pp. 384-394, 2021.
- J. Renew, W. Zhang, and C. -H. Huang, "Mass Transport Release of Heavy Metal Oxyanions from Solidified/Stabilized Co-Disposed Flue Gas Desulfurization Brine and Coal Fly Ash Monoliths," *Environmental Science and Pollution Research*, vol. 28, no. 23, pp. 29945-29957, 2021.
- M. P. Rivera, et al., "Organic solvent reverse osmosis using CuAAC-crosslinked molecularly-mixed composite membranes," *Journal of Membrane Science*, vol. 638, p. 119700, 2021.
- M. P. Rivera, N. C. Bruno, M. G. Finn, and R. P. Lively, "Organic solvent reverse osmosis using CuAAC-crosslinked molecularly-mixed composite membranes," *J. Membr. Sci.*, vol. 638, p. 119700, 2021.
- N. Rodeheaver, R. Herbert, Y. Kim, M. Mahmood, H. Kim, J. Jeong, and W. H. Yeo, "Strain-isolating materials and interfacial physics for soft wearable bioelectronics and wireless, motion artifact-controlled health monitoring," *Advanced Functional Materials*, vol. 31, no. 36, p. 2104070, 2021. 
- S. S. Rojas, G. C. Collins, S. Tridandapani, and B. D. Lindsey, "Ultrasound-gated computed tomography coronary angiography (CTCA): Development of ultrasound transducers with improved CT compatibility," *Medical Physics*, vol. 48, no. 8, pp. 4191-4204, 2021. 
- M. Roy, N. R. Mucha, S. Fialkova, and D. Kumar, "Effect of thickness on metal-to-semiconductor transition in 2-dimensional TiN thin films," *AIP Advances*, vol. 11, p.045204, 2021.
- S. Saha, S. Dawood, P. Butreddy, G. Pathiraja, and H. Rathnayake, "Novel biodegradable low- $\kappa$  dielectric nanomaterials from natural polyphenols," *RSC Adv.*, vol. 11, pp. 16698-16705, 2021. 
- S. E. Sandoval, F. J. Q. Cortes, E. J. Klein, J. A. Lewis, D. Yeh, and M. T. McDowell "Understanding the Effects of Alloy Films on the Electrochemical Behavior of Lithium Metal Anodes with Operando Optical Microscopy," *Journal of the Electrochemical Society*, vol. 168, no. 10, p. 100517, 2021. 
- C.L. San Emeterio, L.A. Hymel, T.C. Turner, M.E. Ogle, E.G. Pendleton, W.Y. York, C.E. Olingy, A.Y. Liu, H.S. Lim, T.A. Sulchek, G.L. Warren, L.J. Mortensen, P. Qiu, Y.C. Jang, N.J. Willett, and E.A. Botchwey, "Nanofiber-Based Delivery of Bioactive Lipids Promotes Pro-regenerative Inflammation and Enhances Muscle Fiber Growth After Volumetric Muscle Loss," *Front Bioeng. Biotechnol.*, vol. 9, p.650289, 2021.
- C. Satam and J. Carson Meredith, "Increasing efficiency of the homogenization process for production of chitin nanofibers for barrier film applications," *Carbohydrate Polymers*, vol. 274, p. 118658, 2021.








- J. M. Selma, H. Song, C. Rivera, S. A. Douglas, A. Akella, K. Bollavaram, N. Thompson, M. O. Platt, and E. A. Botchwey, "Sickle cell disease promotes sex-dependent pathological bone loss through enhanced cathepsin proteolytic activity," *Blood Adv*, vol. 6, no. 5, pp. 1381-1393, 2021.
- C. D. Sewell, Z. Wang, Y. Harn, S. Liang, L. Gao, X. Cui, and Z. Lin, "Tailoring oxygen evolution reaction activity of metal-oxide spinel nanoparticles via judiciously regulating surface-capping polymers," *Journal of Materials Chemistry A*, vol. 9, pp. 20375-20384, 2021.
- S. Sethuraman and R.A. Gerhardt, "Controlling the electrical, optical and morphological properties of sol-gel spin-coated indium tin oxide films," *AIP Advances*, vol. 11, no. 10, p. 105117, 2021.
- P. P. Shetty, S. C. Wright, and M. T. McDowell, "Melting, Crystallization, and Alloying Dynamics in Nanoscale Bismuth Telluride," *Nano Letters*, 2021. 
- A.I. Shiave, R. Mohan, and M. Samykano, "Morphological and Growth Characteristics of Template-Assisted Electrodeposited Cobalt Nanowires: Effect of Synthesis Current Density and Temperature," *MRS Advances*, vol. 6, pp. 659-663, 2021.
- S. Shin, H. Kwon, G. D. Vukasin, T. W. Kenny, and F. Ayazi, "A temperature compensated biaxial eFM accelerometer in Epi-seal process," *Sensors and Actuators A: Physical*, vol. 330, p. 112860, 2021.
- N. Shirolkar, A. Maffe, E. DiLoreto, P. J. Arias-Monje, M. Lu, J. Ramachandran, P. Gulgunje, K. Gupta, J.G. Park, K. C. Shih, M. H. Kirmani, A. Sharits, D. Nepal, M. P. Nieh, R. Liang, T. Tsotsis, and S. Kumar, "Multichannel Hollow Carbon Fibers: Processing, Structure, and Properties", *Carbon*, vol. 174, pp. 730-740, 2021.
- Narayan Shirolkar, Prachi Patwardhan, Aowabin Rahman, Ashley Spear, and S. Kumar, "Investigating the efficacy of machine learning tools in modeling the continuous stabilization process, and predicting carbon fiber properties," *Carbon*, vol. 174, pp. 605-616, 2021.
- C. N. Singh, B. A. Crafton, M. P. West, A. S. Weidenbach, K. T. Butler, A. H. MacDonald, A. Raychowdury, E. M. Vogel, W. Alan Doolittle, L.F.J. Piper, and W. Lee, "Quantum Statistical Transport Phenomena in Memristive Computing Architectures," *Physical Review Applied*, vol. 15, p. 054030, 2021.
- M.C.P. Sok, N. Baker, C. McClain, H.S. Lim, T. Turner, L. Hymel, M. Ogle, C. Olingy, J.I. Palacios, J.R. Garcia, K. Srithar, A.J. Garcia, P. Qiu, and E.A. Botchwey, "Dual delivery of IL-10 and AT-RvD1 from PEG hydrogels polarize immune cells towards pro-regenerative phenotypes," *Biomaterials*, vol. 268, p.120475, 2021.
- S. Stangebye, Y. Zhang, S. Gupta, E. Hosseinian, F. Yu, C. Barr, K. Hattar, O. Pierron, T. Zhu, and J. Kacher, "Grain growth of nanocrystalline aluminum under tensile deformation: a combined in situ TEM and atomistic study," *Materialia*, vol. 16, p. 101068, 2021.
- M. J. Stellato, G. Innocenti, A. S. Bommarius, and C. Sievers, "Pore Blocking by Phenolates as Deactivation Path during the Cracking of 4-Propylphenol over ZSM-5," *Catalysts*, vol. 11, no. 6, p. 721, 2021. 
- B. G. Stewart and S. K. Sitaraman, "Biaxial Inflation Stretch Test for Flexible Electronics," *Advanced Engineering Materials*, vol. 23, no. 6, p. 2001503, 2021.
- Nicholas E. Stone, Abhishek Raj, Katherine M. Young, Adam P. DeLuca, Fatima Ezahra Chrit, Budd A Tucker, Alexander Alexeev, John McDonald, Benedict B Benigno, and Todd Sulchek, "Label-free microfluidic enrichment of cancer cells from non-cancer cells in ascites," *Scientific Reports*, vol. 11, no. 1, pp. 1-9, 2021.

- Nicholas E. Stone, Andrew P. Voigt, Robert F. Mullins, Todd Sulchek, and Budd A. Tucker, "Microfluidic processing of stem cells for autologous photoreceptor cell replacement," *Stem Cells Translational Medicine*, vol. 10, no. 10, pp. 1384–1393, 2021.
- L. Stoy, V. Diaz, and C. -H. Huang, "Preferential Recovery of Rare Earth Elements from Coal Fly Ash Using a Recyclable Ionic Liquid," *Environmental Science & Technology*, vol. 55, no. 13, pp. 9209-9220, 2021.
- F.-Y Su, Q. D. Mac, A. Sivakumar, G. A. Kwong, "Interfacing Biomaterials with Synthetic T Cell Immunity," *Advanced Healthcare Materials*, vol. 10, no. 15, p. 2100157, 2021. 
- Gongchen Sun, Cassidy-Arielle Manning, Ga Hyun Lee, Maryam Majeed, and Hang Lu, "Microswimmer Combing: Controlling Interfacial Dynamics for Open-Surface Multifunctional Screening of Small Animals," *Advanced Healthcare Materials*, vol. 10, p. 2001887, 2021.
- Z. Sun, M. Boebinger, M. Liu, P. Lu, W. Fu, B. Wang, A. Magasinski, Y. Zhang, Y. Huang, A. Song, M. McDowell, and G. Yushin, "The roles of atomic layer deposition (ALD) coatings on the stability of FeF<sub>3</sub> Na-ion cathodes," *Journal of Power Sources*, vol. 507, p. 230281, 2021.
- S. Surappa and F.L. Degertekin, "Passive vibration control and tunable damping of MEMS resonators via electrical autoparametric resonance," *IEEE/ASME JMEMS*, vol. 30, no. 6, pp. 843-852, 2021. 
- S. Surappa, T. Erdogan, and F.L. Degertekin, "Multiple electrically tunable parametric resonances in a capacitively coupled electromechanical resonator for broadband energy harvesting," *Smart Materials and Structures*, vol. 30, no. 4, p. 045024, 2021.
- V. Surendran, D. Rutledge, R. Colmon, and A. Chandrasekaran, "A novel tumor-immune microenvironment (TIME)-on-Chip mimics three dimensional neutrophil-tumor dynamics and neutrophil extracellular traps (NETs)-mediated collective tumor invasion," *Biofabrication*, vol. 13, pp.035029, 2021.
- K. Sutton, S. Xiu, and A. Shahbazi, "Development of fluorine-intercalated biochar material for radiation shielding," *Journal of Analytical and Applied Pyrolysis*, vol.155, p.105038, 2021.
- M. Swaminathan, M. Kathaperumal, K. -S. Moon, H. Sharma, P. Murali, and S. Ravichandran, "Materials for Heterogeneous Integration," *MRS Bulletin*, vol. 46, no. 10, pp. 967-977, 2021.
- H. Taghinejad, S. Abdollahramezani, A. A. Eftekhar, T. Fan, A. H. Hosseinnia, O. Hemmatyar, A. E. Dorche, A. Gallmon, and A.Adibi, "ITO-based micro-heaters for multi-stage switching of phase-change materials: Towards minatureized beyond-binary reconfigurable integrated photonics," *Optics Express*, vol. 29, no. 13, pp. 20449-20462, 2021. 
- C.-K. Tang, Y. -Z Li, F. Ma, Z. Cao, and Y. Mo, "Anti-Electrostatic Main Group Metal-Metal Bonds That Activate CO<sub>2</sub>," *J. Phys. Chem. Lett.*, vol. 12, vol. 31, pp. 7545-7552, 2021. 
- C. -K. Tang, Y. -Z. Li, Z.-J. Zhou, F. Ma, and Y. Mo, "Metalloradical complex Co-C<sup>+</sup>Ph<sub>3</sub> catalyzes the CO<sub>2</sub> reduction in gas phase: a theoretical study," *Physical Chemistry Chemical Physics*, vol. 23, no. 2, pp. 1392 – 1400, 2021. 
- N. Tasneem, M. M. Islam, Z. Wang, H. Chen, J. Hur, D. Triyoso, and A. Khan, "The impacts of ferroelectric and interfacial layer thicknesses on ferroelectric FET design," *IEEE Electron Device Letters*, vol. 42, no. 8, pp. 1156-1159, 2021.
- N. Tasneem, P. V. Ravindran, Z. Wang, J. Gomez, J. Hur, S. Yu, S. Datta, and A. I. Khan, "Differential charge boost in hysteretic ferroelectric-dielectric heterostructure capacitors at steady state," *Appl. Phys. Lett.*, vol. 118, p. 122901, 2021.



- N. Tasneem, Y. M. Yousry, M. Tian, M. Dopita, S. E. Reyes-Lillo, J. Kacher, N. Bassiri-Gharb, and A. I. Khan, "A Janovec-Kay-Dunn-Like Behavior at Thickness Scaling in Ultra-Thin Antiferroelectric ZrO<sub>2</sub> Films," *Advanced Electronic Materials*, vol. 7, no. 11, p. 2100485, 2021. 
- J. W. Teng, A. Ildefonso, G. N. Tzintzarov, A. Moradina, P. Wang, X. Li, E. Zhang, D. M. Fleetwood, and J.D. Cressler, "Variability in Total-Ionizing-Dose Response in 4th-Generation SiGe HBTs," *IEEE Transactions on Nuclear Science*, vol. 68, no. 5, pp. 949-957, 2021.
- A. C. Thenuwara, P. P. Shetty, N. Kondekar, C. Wang, W. Li, and M. T. McDowell, "Enabling Highly Reversible Sodium Metal Cycling Across a Wide Temperature Range with Dual-Salt Electrolytes," *Journal of Materials Chemistry A*, vol. 9, pp. 10992-11000, 2021. 
- A. Thien, C. Saldana, and T. Kurfess, "Surface qualification toolpath optimization for hybrid manufacturing," *Journal of Manufacturing and Materials Processing*, vol. 5, no. 3, p. 94, 2021.
- A. Thien, C. Saldana, and T. Kurfess, "The effect of WAAM process parameters on process conditions and production metrics in the fabrication of single-pass multi-layer wall artifacts," *The International Journal of Advanced Manufacturing Technology*, vol. 119, pp. 531-547, 2021.
- A. Tikadar, D. Johnston, N. Kumar, Y. Joshi, and S. Kumar, "Comparison of Electro-Thermal Performance of Advanced Cooling Techniques for Electric Vehicle Motors," *Applied Thermal Engineering*, vol. 183, p. 116182, 2021.
- X. Tong, S. Liu, D. Qu, H. Gao, L. Yan, Y. Chen, J. Crittenden, "Tannic acid-metal complex modified MXene membrane for contaminants removal from water," *Journal of Membrane Science*, vol. 622, p. 119042, 2021. 
- X. Tong, S. Liu, Y. Zhao, Y. Chen, and J. Crittenden, "Influence of the Exclusion-Enrichment Effect on Ion Transport in Two-Dimensional Molybdenum Disulfide Membranes," *ACS Applied Materials & Interfaces*, vol. 13, no. 23, pp. 26904-26914, 2021. 
- C. K. Tung, and S. S. Suarez, "Co-Adaptation of Physical Attributes of the Mammalian Female Reproductive Tract and Sperm to Facilitate Fertilization," *Cells*, vol. 10, p.1297, 2021.
- K. Turcheniuk, D. Bondarev, G. G. Amatucci, and G. Yushin, "Battery Materials for Low-Cost Electric Transportation," *Materials Today*, vol. 42, pp. 57-72, 2021.
- G. N. Tzintzarov, A. Ildefonso, J. W. Teng, M. Frounchi, A. Djikeng, P. Iyengar, P. S. Goley, R. Bahr, A. Khachatryan, S. P. Buchner, D. McMorrow, and J. D. Cressler, "Optical Single-Event Transients Induced in Integrated Silicon-Photonic Waveguides by Two-Photon Absorption," *IEEE Transactions on Nuclear Science*, vol. 68, no. 5, pp. 785-792, 2021.
- F. Ulu and R. Mohan, "Voxel and Stereolithographic Digital Framework in Additive Manufacturing – Effects in a PolyJet Printing Process and Relevant Digital Solutions", *Progress in Additive Manufacturing*, vol. 6, pp. 1-10, 2021. 
- F. Ulu, R. Tomar, and R. Mohan, "Processing and Mechanical Behavior of Rigid and Flexible Material Composite Systems formed via Voxel Digital Design in PolyJet Additive Manufacturing," *Rapid Prototyping Journal*, vol. 23, pp. 617-626, 2021.
- S. A. Uthale, N.A. Dhamal, D. K. Shinde, and A. D. Kelkar, "Polymeric hybrid nanocomposites processing and finite element modeling: An overview," *Science Progress*, vol. 104, pp.00368504211029471, 2021.
- M. Valizadehderakhshan, A. Shahbazi, M. Kazem-Rostami, M. S. Todd, A. Bhowmik, and L. Wang, "Extraction of cannabinoids from Cannabis sativa L. (Hemp)," *Agriculture*, vol. 11, p.384, 2021.





- E. V. Vassilieva, S. Li, H. Korniyuchuk, D.M. Taylor, S. Wang, M.R. Prausnitz, and R. W. Compans, "cGAMP/saponin adjuvant combination improves protective response to influenza vaccination by microneedle patch in an aged mouse model," *Frontiers in Immunology*, vol. 11, p. 583251, 2021.
- R. Venkatesh, Y. Zheng, C. Viersen, A. Liu, C. Silva, M. Grover, and E. Reichmanis, "Data Science Guided Experiments Identify Conjugated Polymer Solution Concentration as a Key Parameter in Device Performance," *ACS Applied Polymer Letters*, vol. 3, pp. 1321–1327, 2021.
- Biao Wan, Peng Yang, Haesung Jung, Mengqiang Zhu, Julia M. Diaz, and Yuanzhi Tang, "Iron oxide-catalyzed hydrolysis of polyphosphate and the precipitation of calcium phosphate minerals," *Geochemica et Cosmochimica Acta*, vol. 305, pp. 49-65, 2021.
- B. Wang, J. Castellana, and S. N. Melkote, "A Hybrid Post-Processing Method for Improving the Surface Quality of Additively Manufactured Metal Parts," *CIRP Annals – Manufacturing Technology*, vol. 70, no. 1, pp. 175-178, 2021.
- B. Wang, H. Li, Q. Dai, M. Zhang, Z. Zou, J. L. Brédas, and Z. Lin, "Robust Molecular Dipole-Enabled Defect Passivation and Control of Energy Level Alignment for High-Efficiency Perovskite Solar Cells," *Angewandte Chemie International Edition*, vol. 60, no. 32, pp. 17664-17670, 2021.
- J. Wang, Y. Jiang, T. Zhao, Z.L. Dun, A.L. Miettinen, X.S. Wu, M. Mourigal, H.D. Zhou, W. Pan, D. Smirnov, and Z. Jiang, "Magneto-transport evidence for strong topological insulator phase in ZrTe5," *Nature Communications*, vol. 12, p. 6758, 2021. 
- J. Wang, Y. Zheng, and A. Ansari, "Ferroelectric Aluminum Scandium Nitride Thin Film Bulk Acoustic Resonators with Polarization-Dependent Operating States," *Phys. Status Solidi RRL*, vol. 15, p. 2100034, 2021.
- N. Wang, R. Liu, N. Asmare, C.H. Chu, O. Civelekoglu, and A. F. Sarioglu, "Closed-loop feedback control of microfluidic cell manipulation via deep-learning integrated sensor networks," *Lab on a Chip*, vol. 21, no. 10, pp. 1916-1928, 2021.
- N. Wang, R. Liu, N. Asmare, C.H. Chu, and A. F. Sarioglu, "Integrated sensor networks with error correction for multiplexed particle tracking in microfluidic chips," *Biosensors and Bioelectronics*, vol. 174, no. 3, p. 112818, 2021.
- Qian Wang, Haesung Jung, Biao Wan, Pan Liu, Peng Yang, and Yuanzhi Tang, "Transformation kinetics of phosphorus and nitrogen in iron-rich sewage sludges during hydrothermal treatment and recovery of nutrients from process water," *ACS Sustainable Chemistry & Engineering*, vol. 9, no. 31, pp.10630–10641, 2021.
- Qian Wang, Xiaoguang Liu, Haesung Jung, Simin Zhao, Spyros G. Pavlostathis, and Yuanzhi Tang, "Effect of pre-stage hydrothermal treatment on the formation of struvite vs vivianite during semi-continuous anaerobic digestion of sewage sludge," *ACS Sustainable Chemistry & Engineering*, vol. 9, no. 27, pp. 9093–9105, 2021.
- T. Wang, D. K. Brown, and X. Xie, "Operando Investigation of the Locally Enhanced Electric Field Treatment (LEEFT) Harnessing Lightning-Rod Effect for Rapid Bacteria Inactivation," *Nano Lett.* 2022, vol. 22, no. 2, pp. 860-867, 2021. DOI: <https://doi.org/10.1021/acs.nanolett.1c02240>
- Y. Wang, S. Li, C. Dong, Y. Ma, Y. Song, W. Zhu, J. Kim, L. Deng, T.L. Denning, S.M. Kang, M.R. Prausnitz, and B. Z. Wang, "Skin vaccination with dissolvable microneedle patches incorporating influenza neuraminidase and flagellin protein nanoparticles induces broad immune protection against multiple influenza viruses," *ACS Applied Bio Materials*, vol. 4, vol. 6, pp. 4953-4961, 2021. 

- Z. Wang, J. Hur, N. Tasneem, W. Chern, S. Yu, and A. I. Khan, "Extraction of Preisach model parameters for fluorite-structure ferroelectrics and antiferroelectrics," *Scientific Reports*, vol. 11, p. 12474, 2021. 
- Z. Wang, C. Ma, C. Xu, S. A. Sinquefield, M. L. Shofner, and S. Nair, "Graphene oxide nanofiltration membranes for desalination under realistic conditions," *Nature Sustainability*, vol. 4, pp. 402–408, 2021. 
- A. O. Watanabe, K. Kanno, H. Ito, Rao R. Tummala, and M. Swaminathan, "High-density low-loss millimeter-wave package interconnects with the impact of dielectric-material surface roughness," *Appl. Phys. Lett.*, vol. 119, p. 134103, 2021.
- J. D. Williams, and G. P. Peterson, "A Review of Thermal Property Enhancements of Low-Temperature Nano Enhanced Phase Change Materials," *J. Nanomaterials*, vol. 11, no. 10, p. 2578, 2021.
- S. A. Willis, E. K. McGuinness, Y. Li, and M. D. Losego, "Re-examination of the aqueous stability of atomic layer deposited (ALD) amorphous alumina ( $\text{Al}_2\text{O}_3$ ) thin films and the use of a postdeposition air plasma anneal to enhance stability." *Langmuir*, vol. 37, no. 49, p. 14509-14519, 2021. 
- Tzu-Ho Wu, Ya-Qi Lin, Zachary D. Althouse, and Nian Liu, "Dissolution–Redeposition Mechanism of the  $\text{MnO}_2$  Cathode in Aqueous Zinc-Ion Batteries," *ACS Appl. Energy Mater.*, vol. 4, no. 11, pp. 12267–12274, 2021. 
- X. Wu, T. Fan, A. A. Eftekhar, A. H. Hosseinnia, and A. Adibi, "High-Q ultrasensitive integrated photonic sensors based on slot-ring resonator on a 3C-SiC-on-insulator platform," *Optics Letters*, vol. 46, no. 17, pp. 4316-4319, 2021. 
- D. Xia, R. Jin, G. Byagathvalli, H. Yu, L. Ye, C.-Y. Lu, M.S. Bhamla, C. Yang, and MR Prausnitz, "An ultra-low-cost electroporator with microneedle electrodes (ePatch) for SARS-CoV-2 vaccination," *Proceedings of the National Academy of Sciences*, vol. 118, no. 45, p.e2110817118, 2021.
- Y. Xiao, K. Turcheniuk, A. Narla, A.-Y. Song, X. Ren, A. Magasinski, A. Jain, S. Huang, H. Lee, and G. Yushin, "Electrolyte Melt Infiltration for Scalable Manufacturing of Inorganic All-Solid-State Lithium-Ion Batteries," *Nature Materials*, vol. 20, no. 7, pp. 984-990, 2021.
- M. Xie, Z. Lyu, R. Chen, M. Shen, Z. Cao, and Y. Xia, "Pt-Co@Pt octahedral nanocrystals: Enhancing their activity and durability toward oxygen reduction with an intermetallic core and an ultrathin shell," *Journal of the American Chemical Society*, vol. 143, no. 22, pp. 8509-8518, 2021. 
- M. Xie, Y. Shi, R. Chen, M. Shen, and Y. Xia, "In situ growth of Pt-Co nanocrystals on different types of carbon supports and their electrochemical performance toward oxygen reduction," *ACS Applied Materials and Interfaces*, vol. 13, pp. 51988-51996, 2021. 
- Y. Yan, S. Liang, X. Wang, M. Zhang, S. Hao, X. Cui, Z. Li, and Z. Lin, "Robust wrinkled  $\text{MoS}_2/\text{N-C}$  bifunctional electrocatalysts interfaced with single Fe atoms for wearable zinc-air batteries," *Proceedings of the National Academy of Sciences*, vol. 118, no. 40, p. e2110036118, 2021.
- T.-H. Yang, J. Ahn, S. Shi, and D. Qin, "Understanding the Role of Poly(vinylpyrrolidone) in Stabilizing and Capping Colloidal Silver Nanocrystals," *ACS Nano* 2021, vol. 15, no. 9, pp. 14242-14252, 2021.
- Y. Yang, W. Fu, C. Bell, D.-C. Lee, M. Drexler, Y. Nuli, Z.-F. Ma, A. Magasinski, G. Yushin, and F. M. Alamgir, "Iron Phosphide Confined in Carbon Nanofibers as a Free-Standing Flexible Anode for High-Performance Lithium-Ion Batteries," *ACS Appl. Mater. Interfaces*, vol. 13, no. 29, pp. 34074-34083, 2021.


- P. Yeon, S. Kochupurackal Rajan, et al., "Microfabrication, Coil Characterization, and Hermetic Packaging of Millimeter-Sized Free-Floating Neural Probes," *IEEE Sensors Journal*, vol. 21, no. 12, pp. 13837-13848, 2021.
- P. Yeon, S.K. Rajan, J. Falcone, J.L. Gonzalez, G.S. May, R.V. Bellamkonda, O. Brand, M.S. Bakir, and M. Ghovanloo, "Microfabrication, Coil Characterization, and Hermetic Packaging of Millimeter-Sized Free-Floating Neural Probes," *IEEE Sensors Journal*, vol. 21, no. 12, pp. 13837-13848, 2021. 
- Z. Yin, K. Allado, A.T. Sheardy, Z. Ji, D. Arvapalli, M. Liu, P. He, X. Zeng, and J. Wei, "Mingled MnO<sub>2</sub> and Co<sub>3</sub>O<sub>4</sub> Binary Nanostructures on Well-Aligned Electrospun Carbon Nanofibers for Nonenzymatic Glucose Oxidation and Sensing", *Crystal Growth & Design*, vol. 21, pp. 1527-1539, 2021. 
- H. Ying, J. W. Teng, and J. D. Cressler, "Operation of Current Mirrors in SiGe BiCMOS Technology at Cryogenic Temperatures," *IEEE Transactions on Electron Devices*, vol. 68, no. 4, pp. 1439-1445, 2021.
- H. Ying, J.W. Teng, U.S. Raghunathan, J.P. Moody, and J.D. Cressler, "Variability of PN Junctions and SiGe HBTs at Cryogenic Temperatures," *IEEE Transactions on Electron Devices*, vol. 68, no. 3, pp. 987-993, 2021.
- Z. Yiwei, G. Huang, M. Mandal, J. Varcoe, P. A. Kohl, and W. E. Mustain, "Power-Generating Electrochemical CO<sub>2</sub> Scrubbing from Air Enabled Practical AEMFC Application," *Journal of The Electrochemical Society*, vol. 168, no. 2, p. 024504, 2021.
- Y.S.J. Yoo, A. Mullins, S. Das, D. Kang, R. Hamerton, S. Singh, M. De Graef, and J. Kacher, "Crack propagation in AA3xxx during deep drawing investigated using a combined TKD/dictionary indexing approach," *Journal Materials Research*, vol. 36, pp. 2754-2762, 2021. 
- H. Younes, H. Hong, and G. Peterson, "A Novel Approach to Fabricate Carbon Nanomaterials–Nanoparticle Solids through Aqueous Solutions and Their Applications," *Nanomanufacturing and Metrology*, vol. 4, no. 15, 2021.
- Katherine T. Young, Colter Smith, Dale A. Hitchcock, and Eric M. Vogel, "In-Cu alloy substrates for low-temperature chemical vapor deposition of Mo<sub>2</sub>C," *Journal of Vacuum Science & Technology A*, vol. 39, no. 1, p. 012201. 
- Katherine T. Young, Colter Smith, Timothy M. Krentz, Dale A. Hitchcock, and Eric M. Vogel, "Graphene synthesized by chemical vapor deposition as a hydrogen isotope permeation barrier," *Carbon*, vol. 176, pp. 106-117, 2021. 
- J. Youtie, R. Ward, P. Shapira, A.L. Porter, and N. Newman, "Corporate engagement with nanotechnology through research publications," *Journal of Nanoparticle Research*, vol. 23, p. 85, 2021.
- C. Yuan, M. Park, Y. Zheng, J. Shi, R. Dargis, S. Graham, and A. Ansari, "Phonon heat conduction in Al<sub>1-x</sub>Sc<sub>x</sub>N thin films," *Materials Today Physics*, vol. 21 p. 100498, 2021.
- T. Yuan, S. Luo, L. Soule, J. H. Wang, Y. Wang, D. Sun, B. Zhao, W. Li, J. Yang, S. Zheng, M. Liu, "A hierarchical Ti<sub>2</sub>Nb<sub>10</sub>O<sub>29</sub> composite electrode for high-power lithium-ion batteries and capacitors," *Materials Today*, vol. 45, pp. 8-19, 2021.
- W. Yuan, G. Tutuncuoglu, A. T. Mohabir, R. Thorpe, L. C. Feldman, M. A. Filler, and J. W. Shan, "Reducing Conductivity Variability in Si Nanowires via Surface Passivation for Nanoelectronics," *ACS Appl. Nano Mater.*, vol. 4, no. 4, p. 3852-3860, 2021. 
- Wahid Zaman, Ray A. Matsumoto, Matthew W. Thompson, Yu-Hsuan Liu, Yousuf Bootwala, Marm B. Dixit, Slavomir Nemsak, et al., "In situ investigation of water on MXene interfaces," *Proceedings of the National Academy of Sciences*, vol. 118, no. 49, 2021.

- N. Zavanelli, H. Kim, J. Kim, R. Herbert, M. Mahmood, Y. Kim, S. Kwon, N. Bolus, B. Torstrick, C. Lee, and W. H. Yeo, "At-home wireless monitoring of acute hemodynamic disturbances to detect sleep apnea and sleep stages via a soft sternal patch," *Science Advances*, vol. 7, no, 52, p. eabl4146, 2021. 
- N. Zavanelli, J. Kim, and W. H. Yeo, "Recent Advances in High-Throughput Nanomaterial Manufacturing for Hybrid Flexible Bioelectronics," *Materials*, vol. 14, no. 11, p. 2973, 2021.
- N. Zavanelli and W. H. Yeo, "Advances in Nanomaterials and Screen Printing for Stretchable Electronics," *ACS Omega*, vol. 6, no. 14, p. 9344, 2021.
- P. Zhai, Y. Shi, Q. Wang, Y. Xia, and K. Ding, "Elucidating the surface compositions of Pd@Pt<sub>nL</sub> core-shell nanocrystals through catalytic reactions and spectroscopy probes," *Nanoscale*, vol. 13, no. 44, pp.18498–18506, 2021. 
- B. Zhang, L. Wang, S. Ghimire, X. Li, M.S. Todd, and A. Shahbazi, "Enhanced biomethane production via thermophilic anaerobic digestion of cattail amended with potassium phosphate-and magnesium-modified biochar," *Clean Technologies and Environmental Policy*, vol. 23, pp.2399-2412, 2021. 
- C. Zhang and R. W. Neu, "Understanding the role of glaze layer with aligned images from multiple surface characterization techniques," *Wear*, vol. 477, p. 203837, 2021. 
- F. Zhang, E. K. McGuinness, Y. Ma; Y. Ren, J. Leisen, M. D. Losego, and R. P. Lively, "Vapor-phase-infiltrated AlO<sub>x</sub>/PIM-1 "hybrid scaffolds" as solution-processable amine supports for CO<sub>2</sub> adsorption," *ACS Appl. Polym. Mater.*, vol. 3, no. 9, p. 4460-4469, 2021. 
- H. Zhang, B. Wang, and B. Brown, "Aerosol-Jet-Printed CoFe<sub>2</sub>O<sub>4</sub> Nanoparticle – Vertically Aligned Carbon Nanotube Composite for Microsupercapacitors," *Journal of Physical Chemistry*, vol. 125, vol. 14, pp. 7590-7597, 2021. 
- W. Zhang, Y. Zhou, A. M. Hussain, D. Song, Y. Miura, Y. Chen, Z. Luo, N. Kane, Y. Niu, N. Dale, Y. Fukuyama, and M. Liu, "High-Performance, Thermal Cycling Stable, Coking-Tolerant Solid Oxide Fuel Cells with Nanostructured Electrodes," *ACS Applied Materials & Interfaces*, vol. 13, no. 4, pp. 4993-4999, 2021.
- Y. Zhang, Y. Mo, and Z. Cao, "Rational Design of Main Group Metal-Embedded Nitrogen-Doped Carbon Materials as Frustrated Lewis Pair Catalysts for CO<sub>2</sub> Hydrogenation to Formic Acid," *ACS Appl. Mater. Interfaces* 2022, vol. 14, no. 1, pp. 1002-1014, 2021. 
- Y. Zhang, C. Zhang, Y. Mo, and Z. Cao, "Planar Tetracoordinate Silicons in Organic Molecules as Carbenoid-Type Amphoteric Centers: A Computational Study", *Chemistry – A European Journal*, vol. 27, pp. 1402-1409, 2021.
- W. Zhang, Y. Zhou, E. Liu, Y. Ding, Z. Luo, T. Li, N. Kane, B. Zhao, Y. Niu, Y. Liu, and M. Liu, "A Highly Efficient and Durable Air Electrode for Intermediate-temperature Reversible Solid Oxide Cells," *Applied Catalysis B: Environmental*, p. 120631, 2021.
- Yamin Zhang, Joshua D. Howe, Sarah Ben-Yoseph, Yutong Wu, and Nian Liu, "Unveiling the Origin of Alloy-Seeded and Nondendritic Growth of Zn for Rechargeable Aqueous Zn Batteries," *ACS Energy Lett.*, vol. 6, pp. 404–412, 2021. 
- Yamin Zhang, Yifan Zhang, Anmol Mathur, Sarah Ben-Yoseph, Song Xia, Yutong Wu, and Nian Liu, "An effective and accessible cell configuration for testing rechargeable zinc-based alkaline batteries," *Journal of Power Sources*, vol. 491, p. 229547, 2021.



- M. Zhao, Z. Chen, Y. Shi, Z. Hood, Z. Lyu, M. Xie, M. Chi, and Y. Xia, "Kinetically-controlled synthesis of Rhodium nanocrystals with different shapes and a comparison study of their thermal and catalytic properties," *Journal of the American Chemical Society*, vol. 143, no. 16, pp. 6293-6302, 2021. 
- X. Zhao, V.D. Pawlik, D. Huo, S. Zhou, B. Yang, and Y. Xia, "Mechanistic study of seed-mediated growth of gold rhombic dodecahedra," *Journal of Physical Chemistry C*, vol. 125, no. 49, pp. 27394-27402, 2021. 
- T. Zheng, P. K. Jo, S. Kochupurackal Rajan and M. S. Bakir, "Electrical Characterization and Benchmarking of Polyolithic Integration Using Fused-Silica Stitch-Chips With Compressible Microinterconnects for RF/mm-Wave Applications," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 11, no. 11, pp. 1824-1834, Nov. 2021. 
- L. Zhou, X. Qiu, Z. Lyu, M. Zhao, and Y. Xia, "Pd-Au asymmetric nanopyramids: Lateral vs. vertical growth of Au on Pd decahedral seeds," *Chemistry of Materials*, vol. 35, no. 13, pp. 5391-5400, 2021. 
- Y. Zhou, E. Liu, Y. Chen, Y. Liu, L. Zhang, W. Zhang, Z. Luo, N. Kane, B. Zhao, L. Soule, Y. Niu, Y. Ding, H. Ding, D. Ding, and M. Liu, "An Active and Robust Air Electrode for Reversible Protonic Ceramic Electrochemical Cells," *ACS Energy Letters*, vol. 6, no. 4, pp. 1511-1520, 2021.
- Y. Zhou, W. Zhang, N. Kane, Z. Luo, K. Pei, K. Sasaki, Y. M. Choi, Y. Chen, D. Ding, and M. Liu, "An Efficient Bifunctional Air Electrode for Reversible Protonic Ceramic Electrochemical Cells," *Advanced Functional Materials*, vol. 31, no. 40, p. 2105386, 2021.
- Fangyuan Zhou, Fang Zhang, Veronika Zarnitsyna, Larissa Doudy, Zhou Yuan, Kaitao Li, Rodger P. McEver, Hang Lu, and Cheng Zhu, "The kinetics of E- and P-selectin-induced intermediate activation of integrin  $\alpha L\beta 2$  on neutrophil," *Journal of Cell Science*, vol. 134, no. 18, p. jcs258046, 2021.
- M. Zhu, S. Abdollahramezani, T. Fan, and A. Adibi, "Dynamically tunable third-harmonic generation with all-dielectric metasurfaces incorporating phase-change chalcogenides," *Optics Letters*, vol. 46, pp. 5296-5299, 2021.
- B. Zivasatienraj, M. B. Tellekamp, W. Alan Doolittle, "Epitaxy of LiNbO<sub>3</sub>: Historical Challenges and Recent Success," *Crystals*, vol. 11, no. 4, p. 397, 2021.



## External Journal Publications


- C. Dong, Y. Wang, G. X. Gonzalez, and B.-Z. Wang, "Intranasal vaccination with influenza HA/GO-PEI nanoparticles provides immune protection against homo- and heterologous strains," *Biological Sciences*, vol. 118, no. 19, p. e2024998118, 2021. 
- Y. Fukuoka, L. B. Sanchez-Munoz, A. L. Dellinger, and L. B. Schwartz, "Expression and functional characterization of protease-activated receptor 2 (PAR2) and PAR1 on human skin mast cells," *The Journal of Immunology*, vol. 206, pp. 111.17, 2021.
- R. Golovchak, A. Kovalskiy, Y. Shpotyuk, B. Mahlovanyi, D. Ploch, T. Ignatova, A. Kozdras, J. Cebulski, and S. Czopek, "Remedial insight on ageing of glass through the study of ancient man-made artefacts", *Archaeometry*, vol. 63, pp. 312-326, 2021.
- A.V. Gulyuk, D. R. LaJeunesse, R. Collazo, and A. Ivanisevic, "Tuning Microbial Activity via Programmatic Alteration of Cell/Substrate Interfaces," *Advanced Materials*, vol. 33, pp.2004655, 2021.


- J. A. Jimenez and D. Hansen, "Insights into the composition-structure-property relationship in  $P_2O_5$ -CaO- $Na_2O$ -CuO bio-relevant glasses," *Chemical Physics Impact*, vol. 3, p. 100029, 2021. 
- L. M. Johnson, J. B. Mecham, S. A. Krovi, M. M. Moreno Caffaro, S. Aravamudhan, A.L. Kovach, T. R. Fennell, and Mortensen, N. P., "Fabrication of polyethylene terephthalate (PET) nanoparticles with fluorescent tracers for studies in mammalian cells," *Nanoscale Advances*, vol. 3, pp. 339-346, 2021. 
- G. Langer, A. R. Taylor, C. E. Walker, E. M. Meyer, O. B. Joseph, A. Gal, G. M. Harper, I. Probert, C. Brownlee, and G. L. Wheeler, "Role of silicon in the development of complex crystal shapes in coccolithophores," *New Phytol.*, vol. 231, pp. 1845-1857, 2021. 
- A. Milam, P. T. Wasdin, H. Turner, M. E. Salyards, A. Clay, M. R. McPhail, "Quantum dot thin film imaging enables in situ, benchtop analysis of ligand exchange at the solution-film interface," *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, vol. 629, p. 127457, 2021. 
- N. P. Mortensen, M. Moreno Caffaro, S. Aravamudhan, L. Beeravalli, S. Prattipati, R.W. Snyder, S. L. Watson, P. R. Patel, F. X. Weber, S. A. Montgomery, S. J. Sumner, and T. R. Fennell, "Simulated Gastric Digestion, and In Vivo Intestinal Uptake of Orally Administered CuO Nanoparticles and TiO<sub>2</sub> E171 in Male and Female Rat Pups," *Nanomaterials*, vol. 11, pp. 1487, 2021.
- N. P. Mortensen, M. Moreno Caffaro, P. R. Patel, R. W. Snyder, S. L. Watson, S. Aravamudhan, S. A. Montgomery, S. A. Montgomery, T. Lefever, S. Sumner, and T. R. Fennell, "Biodistribution, cardiac and neurobehavioral assessments, and neurotransmitter quantification in juvenile rats following oral administration of aluminum oxide nanoparticles," *Journal of Applied Toxicology*, vol. 41, pp.1316-1329, 2021.
- M. Pirmoradi and J.R. Kastner, "A kinetic model of multi-step furfural hydrogenation over a Pd-TiO<sub>2</sub> supported activated carbon catalyst," *Chemical Engineering Journal*, vol. 414, p. 128693, 2021. 
- H. Shi, S.-Y. D. Chiang, Y. Wang, Y. Wang, S. Liang, J. Zhou, et al., "An electrocoagulation and electrooxidation treatment train to remove and degrade per-and polyfluoroalkyl substances in aqueous solution," *Science of The Total Environment*, vol. 788, p. 147723, 2021.
- V. G. Snider, R. Alshehri, R. M. Slausenhaupt, and C. L. Hill, "Materials for the Simultaneous Entrapment and Catalytic Aerobic Oxidative Removal of Sulfur Mustard Simulants," vol. 13, no. 43, pp. 51519-51524, 2021. 
- Z. Xiao, K. Kisslinger, and R. Monikandan, "Atomic Layer Deposition of Nanolayered Carbon Films," *Journal of Carbon Research*, vol. 7, no. 4, p. 67, 2021. 

## Internal Conference Presentations



- A. Adibi, "Phase-change materials for next-generation reconfigurable nanophotonic structures," NSF Workshop on Future of Semiconductor and Beyond, March 2021.
- A. Adibi, "Analysis and knowledge discovery of metastructures using deep learning and machine learning approaches in reduced-dimensionality spaces," META 2021, Warsaw, Poland, July 2021.
- A. Adibi, "Artificial intelligence in meta-optics," META 2021, Warsaw, Poland, July 2021.
- A. Adibi, "Reconfigurable nanophotonic structures enabled by phase-Change materials," International Conference and Expo on Laser, Optics, and Photonics, August 2021.


- S. Abdollahramezani and A. Adibi, "Dynamically reconfigurable metaphotonic devices," Global Summit on Metamaterials, Nanophotonics and Plasmonics, December 2021.
- S. Abdollahramezani, O. Hemmatyar, H. Taghinejad, M. Zhu, A. L. Gallmon, and A. Adibi, "Reconfigurable hybrid plasmonic-dielectric metasurfaces," SPIE Photonics West, San Francisco, CA, March 2021.
- S. Abdollahramezani, O. Hemmatyar, H. Taghinejad, M. Zhu, A. L. Gallmon, and A. Adibi, "Reconfigurable near-infrared metasurfaces using phase-change materials," CLEO, San Jose, CA, May 2021. 
- S. Abdollahramezani, O. Hemmatyar, H. Taghinejad, M. Zhu, A. L. Gallmon, and A. Adibi, "Dynamically tunable hybrid plasmonic-dielectric metasurfaces," CLEO, San Jose, CA, May 2021. 
- S. Abdollahramezani, H. Taghinejad, O. Hemmatyar, Y. Kiarashinejad, M. Zandehshahvar, A. A. Eftekhar, and A. Adibi, "Dynamic reconfigurable metasurfaces enabled by phase-change materials," IEEE Photonic Society Summer Topicals, July 2021.
- S.C. Adegoke and R. Tahergorabi, "Effect of Canola Oil on the Quality Attributes and Oil Reduction Capacity of Edible Protein-Coated Chicken Breast During Frozen Storage", IFT Annual Meetings, Virtual, 2021.
- K. Adrah and R. Tahergorabi, "Modification of Frying Medium: A Novel Approach to Reduce Fat-uptake in Fried Foods Using Oil Structuring Techniques", IFT Annual Meetings, Virtual, 2021.
- H. Ahmad, Z. Engel, C. M. Matthews, K. Motoki, and W. A. Doolittle, "First Experimental Demonstration of P-type AlN Grown by MME," 63rd Electronic Materials Conference, virtual, June 2021.
- H. Ahmad, J. Lindemuth, Z. Engel, C. M. Matthews, T. M. McCrone, and W. A. Doolittle, "First Time Achievement of MME Grown P-type AlN:Be Films," 21st ICMBE, Puerto Vallarta, Mexico, September 2021.
- N. Aslani-Amoli et al., "Transmission Lines on Alumina Ribbon Ceramic Substrate Material for 30 to 170 GHz Wireless Applications," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), pp. 2272-2278, San Diego, CA, June 1 - July 4, 2021.
- C. A. Barros et al., "Demonstration of a High-Inductance, High-Density, and Low DC Resistance Compact Embedded Toroidal Inductor for IVR," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), 2021, pp. 1293-1299, San Diego, CA, June 1 - July 4, 2021.
- S. Bepari, R. Stevens-Boyd, N. Mohammad, X. Li, R. Abrokwah, and D. Kuila, "Composite mesoporous SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> supported Fe, FeCo and FeRu catalysts for Fischer-Tropsch studies in a 3-D printed stainless-steel microreactor," Materials Today: Proceedings, 2021.
- S. Bililign. "Laboratory studies of Optical Properties of Biomass Burning Aerosols from Sub-Saharan Africa Biomass fuels and impact on climate," In APS March Meeting Abstracts, 2021.
- Amy C. Brummer, Michael A. Filler, and Eric M. Vogel, "Self-Aligned Atomic Layer Deposited Gate Stacks for Electronic Applications," ALD/ALE Virtual Meeting, June 2021.
- P. Butreddy, and H. P. Rathnayake, "Bioinspired Silicon-based Nanocomposites for Solid-State Ionic Conduction," ACS Silicon-containing polymer Workshop, San Diego, CA, 2021.
- P. Butreddy, and H. P. Rathnayake, "Natural Metal-Organic Phenolate Dendrimer Frameworks of Lithium for Solid- State Ionic Conduction," TechConnect Washington, DC, 2021.




- H. T. Bui, S. S. Bhat, C. K. Breuer, A. Armstrong, M. Bocks, A. P. Yoganathan, and L. P. Dasi, "Development of A Fully Degradable Fetal Heart Valve for Implantation In Utero," Summer Biomechanics, Bioengineering and Biotransport Conference, virtual, June 2021.
- W. Cai, "Nonlinear Optics and Ultrafast Phenomena in Plasmonic Metamaterials Facilitated by Hot-Electron Dynamics," The 15th International Congress on Artificial Materials for Novel Wave Phenomena (2021 Metamaterials Congress), virtual, September 2021.
- W. Cai, "Multifunctional Flat Optics via Machine Learning," OSA Optical Design and Fabrication Congress, virtual, June 27 – July 1, 2021.
- W. Cai, "Constructing functional photonic structures with deep learning," Photonics North 2021, virtual, May 31 – June 2, 2021.
- R. Chen, N. J. Ginga, and S. K. Sitaraman, "Magnetically Actuated Test Method for Interfacial Fracture Reliability Assessment," IEEE 71<sup>st</sup> Electronic Components and Technology Conference, San Diego, CA, June 1 – July 4, 2021.
- M. Cho, M. A. Daeumer, J.-H. Yoo, M. Bakhtiary-Noodeh, Q. Shao, Z. Xu, T. Detechprohm, R. Dupuis, and S.-C. Shen, "A study of wafer-scale breakdown characteristics of vertical GaN PIN rectifiers," 2021 CSMANTECH Conference, virtual, May 2021.
- Wook-Jin Choi, Keeya Madani, Ying-Yuan Huang, Aditi Jain, Young-Woo Ok, Vijaykumar D. Upadhyaya Min Gu Kang, Sungjin Choi, and Ajeet Rohatgi, "Optimization of In-situ and Ex-situ doped p+ Passivating Contact for High Efficiency p-TOPCon Solar Cell Application," 2021 IEEE 48th Photovoltaic Specialists Conference (PVSC), pp. 1907-1912, virtual, June 2021.
- J. P. Correa-Baena, "Understanding defects in halide perovskites," SPIE conference, San Diego, CA, August 2021.
- J. P. Correa-Baena, "Interfacial dynamics in halide perovskites," SPTech conference, Portugal, July 2021.
- J. P. Correa-Baena, "Interfaces in halide perovskites: the role of surface passivation," Fall MRS Conference, Boston, MA, November 2021.
- K. Dawkins and S. Iyer, "Simulation Study of Carrier Induced Change in Refractive Index for Optimal Light Absorption in GaAsSb Nanowires," ICTN-KLC Conference, Delhi, India, 2021.
- S. Devkota, M. Parakh, S. Johnson, P. Ramaswamy, M. Lowe, A. Penn, L. Reynolds, and S. Iyer, "A Te doped GaAsSb ensemble nanowire photodetector for near-infrared application," ICTN-KLC Conference, Delhi, India, 2021.
- Shisir Devkota, Rabin Pokharel, Mehul Parakh, Sean Johnson, Priyanka Ramaswamy, Aurbrey Penn, Lewis Reynolds and Shanthi Iyer, "A Te doped GaAsSb ensemble nanowire photodetector for near-infrared application," Electronic Materials Conference, Virtual, 2021.
- W. A. Doolittle, H. Ahmad, Z. Engel, C. M. Matthews, and K. Motoki, "Chemical and Kinetic Mechanisms to Overcome Perceived Limitations in III-Nitride Epitaxy," 21<sup>st</sup> International Conference on Molecular Beam Epitaxy, virtual, September 2021.
- W. A. Doolittle, H. Ahmad, Z. Engel, C. M. Matthews, and K. Motoki, "Chemical and Kinetic Mechanisms to Overcome Perceived Limitations in III-Nitride Epitaxy," Fall 2021 Materials Research Society, Boston, MA, December 2021.
- A. E. Dorche, C. Raman, and A. Adibi, "Very High-Q photonic microdisk resonator in an air-clad, thin-film SiN at near-visible wavelengths," Conference on Lasers and Electro-Optics, San Jose, CA, May 2021. 


- R. Dupuis, S.-C. Shen, T. Detchprohm, M. Cho, M. Bakhtiary-Noodeh, H. Jeong, Z. Xu, and N. Otte, "High-performance GaN-based ultraviolet photon detection technology," IEEE Research and Applications of Photonics in Defense (RAPID), Miramar Beach, FL, August 2021.
- Z. Engel, H. Ahmad, and W. A. Doolittle, "Novel Approach for Growth of High-Quality Aluminum Indium Nitride Covering the Entire Composition Range," MRS, Cambridge, UK, 2021.
- Z. Engel, H. Ahmad, C. M. Matthews, K. Motoki, and W. Alan Doolittle, "Metal Rich, Low Temperature MME Growth of Aluminum Indium Nitride in the Entire Composition Range," 21st ICMBE, Puerto Vallarta, Mexico, September 2021.
- Z. Engel, E. A. Clinton, K. Motoki, H. Ahmad, C. M. Matthews, and W. A. Doolittle, "Self-Assembled AlGaIn Superlattices Grown Via Metal Modulated Epitaxy," 21st ICMBE, Puerto Vallarta, Mexico, September 2021.
- S. Erdogan, S. Ravichandran, X. Jia, and M. Swaminathan, "Characterization of Chip-to-Package Interconnects for Glass Panel Embedding (GPE) for Sub-THz Wireless Communications," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), pp. 2328-2333, 2021.
- S. Erdogan and M. Swaminathan, "D-band Quasi-Yagi Antenna in Glass-based Package," 2021 IEEE MTT-S International Microwave and RF Conference (IMARC), 2021, pp. 1-4, Kanpur, India, 2021.
- M. Fereydouni, M. Motaghd, E. Ahani, P. Desai, K. Dellinger, and C. L. Kepley. "Tumor targeted human mast cells for cancer immunotherapy." Keystone Conference, Emerging Cell Therapies: Realizing the Vision of NextGen Cell Therapeutics (EK-15-2021), Virtual, 2021.
- Estefania Garcia, Pan Liu, and Yuanzhi Tang, "Arsenic (As) and Selenium (Se) Speciation in Coal Fly Ash," Southeastern Biogeochemistry Symposium, Virtual, May 2021.
- Estefania Garcia, Pan Liu, and Yuanzhi Tang, "Understanding As and Se speciation in coal fly ash," American Chemical Society (ACS) Fall Meeting, Atlanta, GA, August 2021.
- Hilena L. Gezahagne, Eleanor L. Brightbill, Decarle S. Jin, Siamalan Krishnathas, Billyde Brown, and Eric M. Vogel, "Structural Properties of Alkanethiolates and Their Influence on The Stability and Reproducibility of Impedimetric Sensing," ECS Meeting, October 2021.
- Janica Gordon, Kelsey Bilsback, Marc Fiddler, Rudra P Pokhrel, Emily V Fischer, Jeffrey R Pierce, and Solomon Bililign, "The Effects of Trash, Residential Biofuel, and Open Biomass Burning Emissions on Local and Transported PM2.5 and its Attributed Mortality in Africa," AGU Fall Meeting, 2021.
- D. S. Gottfried, "National Nanotechnology Coordinated Infrastructure (NNCI): A Model for Sharing Resources and University-Industry Collaboration," ACS Fall 2021 National Meeting, Atlanta, GA, August 2021.
- S. Gregory, K. Malinowski, Y. Li, T. Monroe, J. Li, and S. Yee, "Vapor Phase Infiltration of Titanium Tetrachloride + Water to Electrically Dope Polyaniline (PANI): Process Kinetics, Electronic Properties, and Optical Response," AVS 21<sup>st</sup> International Conference on Atomic Layer Deposition, Virtual, June 2021.
- P. Gupta, H. Wen, and F. Ayazi, "A multi-directional single-proof-mass accelerator contact microphone (Accelophone) with 10kHz open-loop bandwidth," Tech. Digest of the 21<sup>st</sup> International Conference on Solid-State Sensors, Actuators and Microsystems (TRANSDUCERS'21), virtual, June 2021.
- B. Hamelin, J. Yang, Z. Liu, and F. Ayazi, "Monocrystalline 4H Silicon Carbide-on-Insulator Substrates for Nav-Grade Planar BAW Gyroscopes," 2021 IEEE International Symposium on Inertial Sensors and Systems (INERTIAL), pp. 1-4, Kailua-Kona, HI, March 2021. 



- Thomas Hu, Mayar Allam, Shuangyi Cai, Walter Henderson, and Ahmet F. Coskun, "Spatially Resolved 3D Metabolomic Profiling In The Lung Tumor Microenvironment," Biomedical Engineering Society Annual Meeting, Orlando, FL, October 2021.
- K. -Q. Huang and M. Swaminathan, "Antennas in Glass Interposer For sub-THz Applications," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), pp. 1150-1155, San Diego, CA, June 1 - July 4, 2021.
- K. -Q. Huang and M. Swaminathan, "Hybrid Active-Passive Beamforming for Scalable sub-Terahertz Antenna Array," 2021 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (APS/URSI), pp. 109-110, Singapore, December 2021.
- Jeong-Mo Hwang, Christopher Chen, Young-Woo Ok, Wookjin Choi, Ajay Upadhyaya, Vijay Upadhyaya, Brian Rounsaville, and Ajeet Rohatgi, "Investigation on Light Stability of Injected Charge in  $\alpha$ -SiN x: H by Plasma Charge Injection Technology," 2021 IEEE 48th Photovoltaic Specialists Conference (PVSC), pp. 2119-2123, virtual, June 2021.
- T. Ignatova, "Integration of 2D Materials in Van Der Waals Photonic Heterostructures," The 239th Electrochemical Society (ECS) Meeting, 2021.
- T. Ignatova, "Probing Optical Response of 2D Heterostructures across Interface," Novel Optical Materials and Applications (NOMA) Conference, part of the OSA Advanced Photonics Congress, 2021.
- T. Ignatova, S. Pourianejad, and S.V. Rotkin, "Integration of 2D Materials in Van Der Waals Photonic Heterostructures", ECS Meeting, 2021. 
- R. Ilhamsyah, J-M. Dimandja, and P. J. Hesketh, "Design and analysis of breath collection system for rapid analysis of breath condensate," 18<sup>th</sup> IMCS Meeting and 239<sup>th</sup> ECS Meeting, Virtual, May 2021.
- S. Jackson, S. Shendokar, F. Aryeetey, and S. Aravamudhan, "Vapor Phase Synthesis and Characterization of Single and Few Layers of MoS<sub>2</sub>", American Vacuum Society (AVS) 67, Virtual, 2021.
- V. S. Jadhav, and A. D. Kelkar, "Fabrication, Processing and Characterization of Carbon Fibre Reinforced Laminated Composite Embedded With Graphene Lattice Sheets," In ASME International Mechanical Engineering Congress and Exposition, American Society of Mechanical Engineers, 2021. 
- H. Jeong, E. Gazda, M. Ji, M. Cho, M. Bakhtiary-Noodeh, T. Detchprohm, S.-C. Shen, N. Otte, and R. Dupuis, "Low temperature Geiger-mode measurement of gallium nitride p-i-n avalanche photodiode," 63rd Electronic Materials Conference, June 2021.
- Zhigan Jiang, "Exploring the topological phase of narrow-gap materials via magneto-spectroscopy," Joint 23rd Cryogenic Engineering Conference and International Cryogenic Materials Conference, virtual, July 2021.
- Zhigan Jiang, "Numerical simulation of sinusoidal corrugated fins and serrated fins performance at low temperature," Joint 23rd Cryogenic Engineering Conference and International Cryogenic Materials Conference, virtual, July 2021.
- Decarle S. Jin, Xingyuan Zhu, Eleanor L. Brightbill, Billyde Brown, and Eric M. Vogel, "Chemical and Biological Sensor Capsules for Real-Time Measurement of Cell Properties in Bioreactors," ECS Meeting, May 2021.
- S. Johnson, R. Pokharel, M. Lowe, H. Kuchoor, S. Nalamati, K. Davis, H. Rathnayake, and S. Iyer, "Analysis of Patterned GaAsSbN Nanowires via Boltzmann Sigmoidal Model", Electronic Materials Conference, Virtual, 2021.
- J. Kacher, "Understanding degradation and failure mechanisms by multiscale electron microscopy," MS&T, virtual, October 2021.

- J. Kacher, "Understanding degradation and failure mechanisms by multiscale electron microscopy," TMS, virtual, March 2021.
- J. Kacher, T. Ruggles, M. Nowell, and S. Wright, "HR-EBSD based characterization of dislocations in additive manufactured 316L stainless steel," M&M, virtual, 2021.
- J. Kacher, "Relating microstructure to deformation mechanisms in Al alloys via multimodal and multiscale electron microscopy," ICTP, virtual, July 2021.
- J. Kacher, S. Stangebye, Y. Zhang, S. Gupta, T. Zhu, and O. Pierron, "Probing deformation mechanisms in ultrafine grained Al and Au thin films by quantitative in situ TEM deformation," MRS, virtual, December 2021.
- J. Kacher, S. Stangebye, Y. Zhang, S. Gupta, T. Zhu, and O. Pierron, "Probing deformation mechanisms in ultrafine grained Al and Au thin films by quantitative in situ TEM deformation," ICMCTF, virtual, April 2021.
- K. Kanno et al., "Advanced Low-Loss Photo-imageable Dielectric Material for RF/Millimeter-Wave Applications and Demonstration of High-Density Interconnect," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), pp. 544-549, San Diego, CA, June 1 - July 4, 2021.
- J. Li, M. Kathaperumal, O. Gupte, Z. Sun, K. Moon, and C. P. Wong, "Investigation of Aromatic Voltage Stabilizers for Enhancing High Voltage Stability of Epoxy for Power Electronics," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), pp. 2348-2354, San Diego, CA, June 1 - July 4, 2021.
- Afsaneh Khajeh, Hessamedin Naeimi, Lijun Wang, and Abloghasem Shahbazi, "Experimental and Theoretical Studies of an Iron-Based Oxygen Carrier with a Core-Shell Structure of Fe<sub>2</sub>O<sub>3</sub>@CeO<sub>2</sub> for Chemical Looping Biomass Gasification," AIChE Annual Meeting, 2021.
- H. Kim, Y.-S. Kim, and W.-H. Yeo, "Printed skin-conformal bioelectronics for wireless continuous stress monitoring and management," SPIE Smart Structures + Nondestructive Evaluation, virtual, March 2021. 
- H. Kuchoor, S. Nalamati, J. Li, and S. Iyer, "A Study of GaAsSb Nanowires on Monolayer Graphene/SiO<sub>2</sub>/Si and Near-Infrared Photodetector Application", ICTN-KLC Conference, Delhi, India, 2021.
- H. Lee, M. Lee, K. Lee, and S. W. Lee, "3D Structured Graphene Anodes for Alkali Metal Ion Storage Applications," The 240th Electrochemical Society Meeting, Virtual, October 2021.
- M. J. Lee, H. Lee, S. Jin, B. Lee, and S. W. Lee, "Nanostructured Organic Electrodes for Energy Storage Applications," The 48<sup>th</sup> World Polymer Congress IUPAC-MACRO2020+, Virtual Presentation, Jeju, South Korea, May 2021.
- S. W. Lee, "Assembling 3D graphene electrodes for rechargeable battery applications," KICHe Spring Meeting Symposium, Virtual Presentation, Busan, South Korea, April 2021.
- Chao Li, Benoit Hamelin, Farrokh Ayazi, and Chandra Raman, "Progress towards chip-scale transverse laser cooling of thermal atomic beams," 52nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, virtual, June 2021.
- Jiaxiong Li, Kathaperumal Mohanalingam, Omkar Gupte, Zhijian Sun, Kyoung-sik Moon, and Ching-Ping Wong, "Investigation of Aromatic Voltage Stabilizers for Enhancing High Voltage Stability of Epoxy for Power Electronics," IEEE 71ST Electronic Components and Technology Conference, pp. 2348-2354, 2021.




- M. -J. Li, M. Breeden, V. Wang, N. M. K. Linn, C. H. Winter, A. Kummel, and M. Kummel, "Characterization of Low-Temperature Selective Cobalt Atomic Layer Deposition (ALD) for Chip Bonding," IEEE International Interconnect Technology Conference, Kyoto, Japan, July 2021. 
- B. Lin, G. Choe, J. Hur, A. I. Khan, S. Yu, and H. Wang, "Experimental RF characterization of ferroelectric hafnium zirconium oxide material at GHz for microwave applications," IEEE Device Research Conference (DRC), virtual, June 2021. 
- Fang-Chen Lin, Hoseon Lee, P. J. Hesketh, and W. Lam "Micro-solenoid coil design and fabrication for magnetic labeled cell and antibody detection," 240<sup>th</sup> ECS Meeting, Orlando, Virtual, p. 2021MA2021-02-1920, October 2021.
- Z. Liu, A. Daruwalla, B. Hamelin, and F. Ayazi, "A Study of Mode-Matching and Alignment in Disk Resonator Gyros via Femtosecond Laser Ablation," IEEE International Micro Electro Mechanical Systems Conference (MEMS 2021), pp. 342-345, virtual, January 2021. 
- A. Lotfi, M. Navaei, and P. J. Hesketh, "Balanced dual platinum micro-cantilever thermal conductivity gas sensor using 3-omega technique," 18<sup>th</sup> IMCS Meeting and 239<sup>th</sup> ECS Meeting, Virtual, May 2021.
- Y.-C. Luo, J. Hur, T.-H. Wang, A. Lu, S. Li, A. I. Khan, and S. Yu, "Experimental demonstration of non-volatile capacitive crossbar array for in-memory computing," IEEE International Electron Devices Meeting (IEDM) 2021, San Francisco, CA, December 2021.
- C. M. Matthews and W. Alan Doolittle, "Kinetic Model of Vertical Indium Segregation During InGaN Epitaxy," 63rd Electronic Materials Conference, virtual, June 2021.
- C. M. Matthews and W. Alan Doolittle, "Kinetic Model of Vertical Indium Segregation During InGaN Epitaxy," 21st International Conference on Molecular Beam Epitaxy (ICMBE), virtual, September 2021.
- M. T. McDowell, "In Situ Investigation of Transformations in Nanocrystals for Batteries," NanoGe Spring Meeting, Virtual, March 2021.
- M. T. McDowell, "Chemo-Mechanics of Battery Transformations Investigated with In Situ Imaging Methods," MRS Spring Meeting Symposium ST05, Virtual, April 2021.
- M. T. McDowell, "Understanding the Lithium-Electrolyte Interface in Liquid-Electrolyte and Solid-State Batteries," MRS Spring Meeting Symposium CT01, Virtual, April 2021.
- M. T. McDowell, "In Situ and Operando Imaging of The Evolution of Battery Materials and Interfaces," Microscopy and Microanalysis (M&M), Virtual, August 2021.
- M. T. McDowell, "In Situ Investigation of Materials and Interfacial Evolution in Solid-State Batteries," World Conference on Solid Electrolytes for Advanced Applications: Garnets and Competitors, Virtual, October 2021.
- M. T. McDowell, "Chemo-Mechanics of Metal Alloy Anodes in Next-Generation Lithium Batteries," The University of Texas at Austin Energy Institute Workshop on Batteries for a Sustainable Future, Virtual, November 2021.
- M. T. McDowell, "Solid-State Batteries with High-Capacity Anodes: Interface Evolution and Chemo-Mechanics," Materials Research Society Fall Meeting, Virtual, December 2021.
- E. McGuinness, B. Jean, Y. Liu, B. G. del Rio, F. Zhang, Y. Ren, C. Huang, V. R. Joseph, R. Ramprasad, and R. P. Lively, "Vapor Phase Infiltration (VPI) for Transforming Polymers into Organic-Inorganic Hybrid Membranes for Organic Solvent Nanofiltration: An Overview," ACS Fall 2021 Meeting, Atlanta, GA, August 2021.

- F. Mehnke, Z. Xu, T. Detchprohm, M. Cho, S.-C. Shen, and R. D. Dupuis, "Development of (In)AlGaIn-based UV laser diodes emitting at 369 nm," SPIE OPTO, virtual, 2021. 
- M. Motaghd, K. Dellinger, E. Ahani, M. Fereydouni, and C.L. Kepley. "Transfection of Human Adipose-Derived Mast Cells: A Characteristic Study using Different Chemical Reagents," Society for Immunotherapy of Cancer 36th Annual Meeting, Washington, D.C., 2021.
- K. Motoki, Z. Engel, C. M. Matthews, H. Ahmad, and W. A. Doolittle, "Observation of Interfacial Strain Relaxation in High Indium, AlInN/GaN Heterostructures by Transmission Electron Microscope," 63rd Electronic Materials Conference, virtual, June 2021.
- M. Nazemi and M.A. El-Sayed, "Mechanistic understanding of electrochemical nitrogen reduction reaction on hybrid plasmonic nanostructures using operando surface-enhanced Raman spectroscopy," ACS Spring 2021, April 2021.
- M. Nazemi and M.A. El-Sayed. "The role of femtosecond pulsed laser induced atomic redistribution in bimetallic Au-Pd nanorods on optoelectronic and catalytic properties," ACS Fall 2021, August 2021.
- M. Nazemi and M.A. El-Sayed, "Discovering Hybrid Plasmonic Nanocatalysts for Solar-Chemical Energy Conversion Via Femtosecond Pulsed Laser-Induced Atomic Redistribution in Bimetallic Au-Pd Nanorods," The Electrochemical Society, October 2021.
- M. Parakh, S. Johnson, R. Pokharel, P. Ramaswamy, J. Li and S. Iyer, "Study of Space Charge Limited Conduction Mechanism and Effect of In-situ Annealing on Trap Distribution in GaAs<sub>1-x</sub>Sb<sub>x</sub> Nanowires." ICTN-KLC Conference, Delhi, India, 2021.
- G. Pathiraja and H. P. Rathnayake, "Sub-10 nm Anisotropic Copper Oxide Nanowires for Electrochemical Sensing," TechConnect, Washington, DC. Accepted, 2021.
- A. Payne, A. H. Rao, Z. Engel, C. M. Matthews, H. Ahmad, T. Brown, and W. Alan Doolittle, "Machine Learning for Evaluation of RHEED Spectra on III-Nitride Films Grown Using Molecular Beam Epitaxy," 63rd Electronic Materials Conference, virtual, June 2021.
- E. Plis, "Spectral Characterization of Novel Spacecraft Materials at LEO Environment," 2<sup>nd</sup> annual VOLTRON meeting, virtual, March 2021.
- E. A. Plis, et al., "Ground Testing of the MISSE-16 Materials," Applied Space Environments Conference (ASEC), virtual, November 2021.
- E. A. Plis, K. W. Fulford, D. P. Engelhart, V. G. Murray, D. Ferguson, and R. C. Hoffmann, "Space weathering of solar array coverglasses," Sensors and Systems for Space Applications XIV, vol. 11755, p. 117550Q, virtual, 2021.
- R. Pokharel, P. Ramaswamy, S. Devkota, M. Parakh, K. Dawkins, A. Penn, M. Cabral, L. Reynolds, and S. Iyer, "A study of Epitaxial GaAsSbN (Te) ensemble nanowires for near infrared region photodetection", ICTN-KLC Conference, Delhi, India, 2021.
- M.R. Prausnitz, "Microneedle technology for drug delivery," Johnson & Johnson Labs, virtual conference, February 2021.
- M.R. Prausnitz, "Microneedle technologies for targeted delivery to skin, cells and eye," Moderna, virtual conference, September 2021.
- M.R. Prausnitz, "Translation of microneedle patch technology for the eye and the skin," Italian Pharmaceutical Industry Association Symposium, virtual conference, September 2021.
- M.R. Prausnitz, "Microneedle patches for maternal and pediatric health: treatment of postpartum hemorrhage and diagnosis of cystic fibrosis," Microneedle & Transdermal Delivery Systems Virtual Summit, October 2021.

- S. Kochupurackal Rajan, A. Kaul, T Sarvey, G. S. May, and M. S. Bakir, "Design Considerations, Demonstration, and Benchmarking of Silicon Micro-cooled Plate and Monolithic Microfluidic Cooling for 2.5D ICs," 71st IEEE Electronic Components and Technology Conf. (ECTC), San Diego, CA, June 2021. 
- A. Rajapakse and A. Erickson, "Vertically aligned carbon nanotube radiation detection and photodetection," University Program Review (UPR) 2021 Meeting, Atlanta, September 2021.
- A. Rajapakse and A. Erickson, "Exploring the Photoconductive Nature of Carbon Nanotube Ionizing Radiation Detectors," 2021 IEEE NSSMIC, Yokohama, Japan, October 2021.
- Priyanka Ramaswamy, Rabin Pokharel, Mehul Parakh, Shisir Devkota, Keith Jones, Jia Li, and Shanthi Iyer, "Doping Assessment of Ga-Assisted MBE Grown Be-Doped GaAs and Te-Doped GaAsSb Nanowires for Infrared Photodetector Application", Electronic Materials Conference, Virtual, 2021.
- P. Ramaswamy, R. Pokharel, M. Parakh, S. Devkota, F. Stevie, J. Li, and S. Iyer, "Electrical Characteristics and Surface Analysis of Ga-Assisted MBE grown Be-Doped GaAs Nanowires and Te-Doped GaAsSb Nanowires for Infrared Photodetector Application", ICTN-KLC Conference, Delhi, India, 2021.
- P. Ramaswamy, R. Pokharel, M. Parakh, K. Jones, J. Li, and S. Iyer, "Be-doping assessment in Self-Catalyzed MBE Grown GaAs Nanowires," Conference on Lasers and Electro-Optics, San Jose, CA, May 2021. 
- M. Ur Rehman, A. Watanabe, S. Ravichandran and M. Swaminathan, "Substrate Integrated Waveguides in Glass Interposers for mm Wave Applications," 2021 IEEE MTT-S International Microwave Symposium (IMS), 2021, pp. 339-341, Atlanta, GA, June 2021.
- S. S. Rojas, S. Tridandapani, and B. D. Lindsey, "A thin, high penetration depth phased array transducer with a metamaterial acoustic backing for cardiac imaging with X-ray computed tomography compatibility," 2021 IEEE International Ultrasonics Symposium (IUS), pp. 1-4, Xi'an, China, September 2021. 
- S. Saudi, J. Sankar, S. Aravamudhan, N. Bhattarai, "Nanonet-nano fiber electrospun mesh of PCL–chitosan for controlled release of hydrophilic drugs," Annual SFB Meeting & Exposition, Virtual, 2021.
- K. Schmidt, X. Li, S. Pourianejad, A. Trofe, S.V. Rotkin, and T. Ignatova. "Intrinsic Shear Strain in Graphene Heterostructures Detected Via Raman Spectroscopy". ECS Meeting, 2021. 
- J. Shi, A. Krishnan, A. F. M. A. U. Bhuiyan, Y. R. Koh, K. Huynh, A. Mauze, S. Mu, B. Foley, H. Ahmad, T. Itoh, Y. Zhang, Z. Feng, C. Yuan, S. Kim, W. A. Doolittle, C. V. Walle, J. S. Speck, M. Goorsky, P. Hopkins, H. Zhao, and S. Graham, "Thermal transport across Al-(Al<sub>x</sub>Ga<sub>1-x</sub>)<sub>2</sub>O<sub>3</sub> and Al-Ga<sub>2</sub>O<sub>3</sub> interfaces," ASME 2021 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems InterPACK2021, virtual, October 2021.
- S. Shin, A. Daruwalla, Z. Liu, and F. Ayazi, "A Sub-Micro-G Resolution Frequency-Modulated Piezoelectric In-Plane Accelerometer," 2021 IEEE International Symposium on Inertial Sensors and Systems (INERTIAL), pp. 1-2, Kailua-Kona, HI, March 2021.
- S. Sivapurapu, R. Chen, M. Rehman, K. Kanno, T. Kakutani, M. Letz, F. Liu, S. K. Sitaraman, and M. Swaminathan, "Flexible and Ultra-Thin Glass Substrates for RF Applications," 2021 IEEE 71st Electronic Components and Technology Conference (ECTC), 2021, pp. 1638-1644, San Diego, CA, June 1 – July 4, 2021.
- B. G. Stewart and S. K. Sitaraman, "Modeling Flexible Electronics Under Biaxial Strain," IEEE 71<sup>st</sup> Electronic Components and Technology Conference, pp. 946-953, San Diego, CA, June 1 – July 4, 2021.








- Zhijian Sun, Jiaxiong Li, Mingyue Zhang, Michael Yu, Kyoung-sik Moon, and Ching-Ping Wong, "Large-scale and low-cost production of graphene nanosheets-based epoxy nanocomposites with latent catalyst to enhance thermal conductivity for electronic encapsulation," IEEE 71ST Electronic Components and Technology Conference, pp. 607—612, 2021.
- S. Surappa, M. Tao, and F. L. Degertekin, "Phononic Frequency Comb Generation in a Micromechanical Resonator Operating in Air and Liquid Environments," 2021 Joint Conference of the European Frequency & Time Forum & IEEE Intl Frequency Control Symposium, virtual, July 2021.
- H. Taghinejad and A. Adibi, "A new paradigm for the synthesis of nanometer-sized lateral 2D heterostructures in monolayer semiconductors," SPIE Photonics West Meeting, San Francisco, CA, January 2021.
- H. Taghinejad and A. Adibi, "Ultra-miniaturized lateral heterostructures in 2D semiconductors," SPIE Optics and Photonics, San Diego, CA, August 2021.
- Y. Tao and A. Erickson, "Novel technical approaches to ultraviolet sensitive silicon photomultipliers," University Program Review (UPR) 2021 Meeting, Atlanta, 2021.
- Y. Tao and A. Erickson, "Investigation of Novel Selective Emitter Structure for Ultraviolet Sensitive SiPM," 2021 IEEE NSS/MIC, Yokohama, Japan, October 2021.
- N. Tasneem, Z. Wang, Z. Zhao, N. Upadhyay, S. Lombardo, H. Chen, J. Hur, D. Triyoso, S. Consiglio, K. Tapily, R. Clark, G. Leusink, S. Kurinec, S. Datta, S. Yu, K. Ni, M. Passlack, W. Chern, and A. I. Khan, "Trap capture and emission dynamics in ferroelectric field-effect transistors and their impact on device operation and reliability," IEEE International Electron Devices Meeting (IEDM) 2021, San Francisco, CA, December 2021. 
- A.N. Urmanbetova, L. E. Green, P. J. Hesketh, P. Pollet, H. Sharma, and C. N. Stewart, "How One Faculty Learning Community Became Much More," USG Teaching Learning Conference, 2021.
- D. Vaca, V. Smet, Y. Joshi, and S. Kumar, "Highly Oriented Pyrolytic Graphite as Heat Spreader for Portable Devices," Technology and Innovation International Conference 2021 (TECHON 2021), virtual, September 2021.
- J. Wang, M. Park, and A. Ansari, "Thermal Characterization of Ferroelectric Aluminum Scandium Nitride Acoustic Resonators," 2021 IEEE 34th International Conference on Micro Electro Mechanical Systems (MEMS), pp. 214-217, Gainesville, FL, January 2021.
- Qian Wang, Xiaoguang Liu, Haesung Jung, Simin Zhao, Spyros G. Pavlostathis, and Yuanzhi Tang, "Effects of hydrothermal pretreatment on the formation of struvite during semi-continuous anaerobic digestion of sewage sludge," American Chemical Society (ACS) Spring Meeting, March 2021.
- Qian Wang and Yuanzhi Tang, "Dynamic transformation of phosphorus and nitrogen during hydrothermal treatment (HT) of sewage sludge and resource recovery from HT process water," American Chemical Society (ACS) Spring Meeting, March 2021.
- Qian Wang, Chiqian Zhang, Pan Liu, Haesung Jung, Biao Wan, Dhara Patel, Spyros G. Pavlostathis, and Yuanzhi Tang, "Effect of inter-stage hydrothermal treatment on anaerobic digestion of sewage sludge: Speciation evolution of phosphorus and iron," American Chemical Society (ACS) Fall Meeting, Atlanta, GA, August 2021.
- Y. Wang, C. Swank, T. Zheng, J. F. Buckwalter, A. Kummel, M. Rodwell, and M. S. Bakir, "Interposer and Advanced Packaging Enabled by Ultra-Dense Microdiamond Composites for RF/mm-wave Applications," TECHCON 2021, September 2021.

- Z. Wang, N. Tasneem, J. Hur, H. Chen, S. Yu, W. Chern, and A. I. Khan, "Standby bias improvement of read after write delay in ferroelectric field effect transistors," IEEE International Electron Devices Meeting (IEDM) 2021, San Francisco, CA, December 2021. 
- Bochao Wei, Ali Eshaghian Dorche, Ali Adibi, and Chandra Raman, "High quality factor micro-ring resonator for strong atom-light interactions using miniature atomic beams," 52nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, virtual, June 2021.
- P. J. Welch, C. R. Forest, and C. Shi, "The impact of lipid shell composition of perfluorocarbon nanodroplets on size distribution and acoustic droplet vaporization and cavitation dynamics," 181st Meeting of the Acoustical Society of America, Seattle, WA, November 29-December 3, 2021.
- Matthew P. West, Robert H. Montgomery, Georges Pavlidis, Riley Hanus, Fabia Farlin Athena, Andrea Centrone, Samuel Graham, and Eric M. Vogel, "Independent impact of the electrode thermal environment on the analog response of HfO<sub>x</sub>-based filamentary neuromorphic devices," MRS Fall Meeting, November 2021.
- D. P. Widiyanto, B. G. Stewart, J. L. Mena-Lapaix, R. H. Shafer, A. Burns, M. R. Prausnitz, A. Alizadeh, and S. K. Sitaraman, "Microneedle Insertion into Visco-Hyperelastic Model for Skin for Healthcare Application," IEEE 71<sup>st</sup> Electronic Components and Technology Conference, pp. 1481-1489, San Diego, CA, June 1 – July 4, 2021.
- X. Wu, T. Fan, A. A. Eftekhar, A. H. Hosseinnia, and A. Adibi, "High-Q Slot-Waveguide-Based Ring Resonator on a 3C-SiC-on-Insulator Platform for Ultrasensitive Sensing Applications," IEEE Photonics Conference (IPC), 2021.
- P. Yanka, J. Lyles, D. Rattigan, O. Damavandi, D. Sussman, M.L. Manning, and C.K. Tung, "Analysis of a Self-Propelled Particle Model for Understanding Flocking Transition in Sperm," In APS March Meeting Abstracts, 2021.
- Simin Zhao, Pan Liu, and Yuanzhi Tang, "Effects of mineral substrate on authigenic clay formation in the reverse weathering process," Southeastern Biogeochemistry Symposium, Virtual, May 2021.
- Simin Zhao, Pan Liu, and Yuanzhi Tang, "The effect of Fe<sup>2+</sup> concentration in biogenic silica transformation at low Al level in reverse weathering," American Geophysical Union (AGU) Fall Meeting, New Orleans, LA, December 2021.
- Simin Zhao and Yuanzhi Tang, "Roles of Fe<sup>2+</sup> concentration in biogenic silica transformation in reverse weathering," American Chemical Society (ACS) Fall Meeting, Atlanta, GA, August 2021.
- Y. Zheng, M. Park, A. Ansari, C. Yuan, and S. Graham, "Self-Heating and Quality Factor: Thermal Challenges in Aluminum Scandium Nitride Bulk Acoustic Wave Resonators," 2021 21st International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers), pp. 321-324, Orlando, FL, June 2021.
- M. Zhu, S. Abdollahramezani, O. Hemmatyar, and A. Adibi, "Tunable third harmonic generation using low-loss phase-change chalcogenides," SPIE Photonics West Meeting, Virtual Event, 2021.
- M. Zhu, S. Abdollahramezani, C. Li, T. Fan, H. Harutyunyan, and A. Adibi, "Broadband-tunable third-harmonic generation using phase-change chalcogenides," Conference on Lasers and Electro-Optics (CLEO): QELS\_Fundamental Science, p. FTu1L-7, San Jose, CA, May 2021. 
- M. Zhu, C. Li, T. Fan, S. Abdollahramezani, X. Wu, H. Harutyunyan, and A. Adibi, "Quasibound states in the continuum for bidirectional symmetry-breaking nonlinear metasurfaces," Conference on Lasers and Electro-Optics (CLEO): QELS\_Fundamental Science, p. FTh1M-4, San Jose, CA, May 2021. 

## External Conference Presentations

- O. Brunhoeber and L. Beckingham, "Role of mineralogy in controlling fracture formation," Geological Society of America (GSA) Southeastern Section Meeting (virtual), April 1-2, 2021.
- N. P. Mortensen, M. M. Moreno Caffaro, R. W. Snyder, S. L. Watson, P. R. Patel, S. J. Sumner, and T. R. Fennell "Simulated Gastric Digestion and In Vivo Intestinal Uptake of Orally Administered CuO Nanoparticles and TiO<sub>2</sub> E171 in Male and Female Rat Pups," SOT Annual Meeting and ToxExpo, Virtual, 2021.

## Books and Book Chapters

- S. Bepari, R. Abrokwah, V. Deshmane, and D. Kuila, "Steam Reforming of Methanol, Ethanol and Glycerol over Catalysts with Mesoporous Supports: A Comparative Study," in Catalysis for Clean Energy and Environmental Sustainability, Springer Nature, 2021.
- N. Mohammad, O. M. Basha, S. Bepari, R. Y. Abrokwah, V. Deshmane, L. Wang, S. Aravamudhan, and D. Kuila, "Fischer-Tropsch Synthesis in Silicon and 3D Printed Stainless Steel Microchannel Microreactors," in Catalysis for Clean Energy and Environment Sustainability, Edited by K. K. Pant, S. K. Gupta, and E. Ahmad, Springer Cham, 2021. 
- M. Nazemi and M.A. El-Sayed, Photo-Electrochemical Ammonia Synthesis: Nanocatalyst Discovery, Reactor Design, and Advanced Spectroscopy, CRC Press, Boca Raton, 2021. <https://doi.org/10.1201/9781003141808>.
- G. Pathiraja and H. Rathnayake, "Ultrathin Metal Hydroxide/Oxide Nanowires: Crystal Growth, Self-Assembly, and Fabrication for Optoelectronic Applications," in 21st Century Nanostructured Materials - Physics, Chemistry, Classification, and Emerging Applications in Industry, Biomedicine, and Agriculture, Edited by P. Pham, IntechOpen, 2021. DOI: 10.5772/intechopen.101117 
- E. A. Plis, K. W. Fulford, D. P. Engelhart, V. G. Murray, D. Ferguson, and R. C. Hoffmann, "Space weathering of solar array coverglasses, in Sensors and Systems for Space Applications XIV, Edited by Genshe Chen and Khanh D. Pham, SPIE, 2021.
- S. Rani, M. Kumar, Y. Singh, and R. Kumar, "Metal Oxide/CNT/Graphene Nanostructures for Chemiresistive Gas Sensors," in Chemical Methods for Processing Nanomaterials, Edited by V. N. Singh, CRC Press, 2021. 
- Hemali Rathnayake and Gayani Pathiraja, "Ultrathin metal hydroxide/oxide nanowires: Crystal growth, self-assembly, and fabrication for optoelectronic applications", 21st Century Nanostructured Materials – Physics, Chemistry, Classification, and Emerging Applications in Industry, Biomedical, and Agriculture, Edited by P. V. Pham, 2021.
- H. Robert and W. H. Yeo, "Soft Material-Enabled Packaging for Stretchable and Flexible Hybrid Electronics," in Nano-Bio- Electronic, Photonic and MEMS Packaging, Edited by C. P. Wong, K. Moon, and Y. Li, Springer Cham, 2021. 
- L. Zhang and D. Yu, "Surface Modification of Glass Nanofillers and Their Reinforcing Effect in Epoxy-Based Nanocomposites," in Chemical Methods for Processing Nanomaterials, Edited by V. N. Singh, CRC Press, 2021. 
- T. Zheng, A. Kaul, S. Kochupurackal Rajan, and M. S. Bakir, "Polyolithic Integrated Circuits using 2.5D and 3D Heterogeneous Integration: Electrical and Thermal Design Considerations and

Demonstrations," in Embedded and Fan-Out Wafer and Panel Level Packaging Technologies for Advanced Application Spaces, Edited by B. Keser and S. Kröhnert, Wiley, 2021.

## Patents/Applications/Invention Disclosures

- S. Aravamudhan, and K. Garde, "Application of Electrical Stimulation via Nanoelectrodes to Stimulate Stem Cell," US Patent 11,208,647, 2021.
- T. E. Brady, A.L. Dellinger, A. L. Robertson Jr, and R. Tinker-Kulberg, "Synthetic, multifaceted halogenated, functionalized fullerenes engineered for microbicidal effects employing controlled contact for safe therapeutic and environmental utility," U.S. Patent 10,934,168, 2021.
- W. A. Doolittle, "First Experimental Demonstration of P-type AlN Grown by MME," Invention Disclosure 1/31/2021.
- W. A. Doolittle, "Cascaded Ni Hard Mask to Create ICP Dry Etched Deep Mesas for High-Power Devices," Invention Disclosure 8/12/2021.
- W. A. Doolittle, "Improved Breakdown Performance in High-Power Devices via Thin Current Spreading Layers," Invention Disclosure 8/12/2021.
- W. A. Doolittle, "First-time Experimental Achievement of Junction Barrier Schottky Diodes via Relaxed p-AlN on n-GaN Films," Invention Disclosure 8/12/2021.
- W. A. Doolittle, "High Breakdown High-Power Be Doped AlN Schottky Diode," Invention Disclosure 9/15/2021.
- R. D. Dupuis, T. Detchprohm, F. Mehnke, and S.-C. Shen, "A method of manufacture using non-planar structures for the growth of strained III-nitride materials and devices," Provisional Patent Application 63/208,653, filed June 2021.
- A. Guenther, J. Alston, P.H. Boyd, J.M. Mabry, T. W. Rost, and US Air Force, "Surface coatings, treatments, and methods for removal of mineral scale by self-release," U.S. Patent 10,941,330., 2021.
- D. Herr, H. Rathnayake, and K. Dellinger, "Amphiphilic hybrid nanomaterials," U.S. Patent Number. 11,031,151, issued June 8, 2021.
- Daniel J. C. Herr, Hemali Rathnayake, and Kristen Dellinger, "Bioinspired sub-7 nm self-assembled structures and processes with coordination and dynamic Chi", Full Application filed (International Application # PCT/US 11,031, 151 B2, 2021).
- S. Iyer, J. Li, P. Deshmukh, and M. Sharma, "High Sb Concentration GaAsSb/GaAs(1-x)SbxN/GaAlAs Core-Shell –Shell Nanowires", US Utility Patent application filed April 13, 2021, U.S. Serial No. 17/229,066, Publication No.: US2021/0317598 A1, publication date October 14, 2021.
- S. Iyer, S. Nalamati, and J. Li, "GaAs<sub>1-x</sub>Sbx Nanowires on a Graphitic Substrate", provisional application filed: September 30, 2019; US Utility Patent Applications Publication No.: US 2021/0095199 A1, publication date April 1, 2021.
- S. Iyer, R. Pokharel, and J. Li. "MBE growth of high-quality dilute nitride GaAsSbN for room temperature near infrared photodetection application", provisional application filed on August 27, 2021.
- A.D. Kelkar, and V. S. Jadhav, "Innovative hole making process in composite laminates," U.S. Patent Application 17, 094,440, 2021.
- Michael A. Filler and Eric M. Vogel, "Chemical Etching Methods for Fabricating Nanostructures," Patent Application US20210384317A1, filed December 2021.

- D. McAllister, M. Prausnitz, and S. Henry, "Drug delivery devices having separable microneedles," US Patent Number 10,940,301, issued 2021.
- M. T. McDowell, F. J. Q. Cortes, T. Chen, V. Sundaram, and D. Majumdar, "Aluminum-Based Anode for Lithium Ion Batteries," Provisional Patent Application, filed July 2021.
- A.N. Ofori-Boadu, and E. Fini. "Swine-Waste Biochar as a Sustainable Cement Replacement Material", US11104611B2, publication date August 31, 2021.
- M. R. Prausnitz, H. F. Edelhauser, and S. R. Patel, "Methods and devices for drug delivery to ocular tissue using microneedle," US Patent Number 10,905,586, issued 2021.
- A. Rajapakse and A. Erickson, "Vertically Aligned Carbon Nanotube Based Radiation Detectors," Invention Disclosure, August 16, 2021.
- Hemali Rathnayake and Sheeba Dawood, "Nanoporous polyphenol-based coordination polymer frameworks (CPFs) and their nanostructures as molecular sieves for metal ions extraction", International Application # PCT/US2020/050607, 2021.
- Hemali Rathnayake, Tetyana Ignatova, and Selina Laws, "Methods, Composition, and Devices for Developing Biophotonic Charge Storage Cell", Disclosure # 22-0002, 2021.
- V. V. Rotkin, M. Zheng, T. Ignatova, D. Hayes, and S. Kuchipudi, "Methods and systems for early detection of viral diseases." US App. 20210364517A1, publication date November 25, 2021.
- S.-C. Shen, T. Detechprohm, Y. Park, R. Dupuis, and O. Moreno, "A method of manufacture using complementary conductivity-selective wet-etching techniques for III-nitride materials and devices," US patent number 11,195,722, issued December 7, 2021.
- J. Wei, "Compositions and methods for enhancing electrocatalytic efficiencies", US20210198792A1. US App. 17269695, publication date July 1, 2021.
- L. Zhang, E. H. Fini, and S. R. Karnati, "Green epoxy resin with biobinder from manure," U.S. Patent 11,168,207, 2021.