

14. MRSEC-SUPPORTED PUBLICATIONS AND PATENTS MRSEC IV (PERIOD 6)

†Denotes Publications with International Co-Authors

**Denotes 100% MRSEC Supported

IRG-1 Publications resulting from PRIMARY MRSEC Support

1. Wang, H.; Walter, J.; Ganguly, K.; Yu, B.; Yu, G.; Zhang, Z.; Zhou, H.; Fu, H.; **Greven, M.; Leighton, C.** *Wide-voltage-window reversible control of electronic transport in electrolyte-gated epitaxial BaSnO₃*. Phys. Rev. Materials, **2019**, 3 (7), 075001. DOI: [10.1103/PhysRevMaterials.3.075001](https://doi.org/10.1103/PhysRevMaterials.3.075001) **DMR-1420013****
2. Zare Bidoky, F.; Tang, B.; Ma, R.; Jochem, K.S.; Hyun, W.J.; Song, D.; **Koester, S.J.; Lodge, T.P.; Frisbie, D.** *Sub-3 V ZnO Electrolyte-Gated Transistors and Circuits with Screen-Printed and Photo-Crosslinked Ion Gel Gate Dielectrics: New Routes to Improved Performance*. Adv. Funct. Mater., **2019**, 1902028. DOI: [10.1002/adfm.201902028](https://doi.org/10.1002/adfm.201902028) **Collaboration with IRG-3. DMR-1420013****
3. Yarmoghaddam, E.; Haratipour, N.; **Koester, S.J.**; Rakheja, S. *A virtual-source emission-diffusion I-V model for ultra-thin black phosphorus field-effect transistors*. J. Appl. Phys., **2019**, 125 (16), 165706. DOI: [10.1063/1.5064474](https://doi.org/10.1063/1.5064474) **DMR-1420013**
4. Yarmoghaddam, E.; Haratipour, N.; **Koester, S.J.**; Rakheja, S. *A Physics-Based Compact Model for Ultrathin Black Phosphorus FETs--Part I: Effect of Contacts, Temperature, Ambipolarity, and Traps*. IEEE Transactions on Electron Devices, **2020**, (67), 1. DOI: [10.1109/TED.2019.2951662](https://doi.org/10.1109/TED.2019.2951662) **DMR-1420013**
5. Yarmoghaddam, E.; Haratipour, N.; **Koester, S.J.**; Rakheja, S. *A Physics-Based Compact Model for Ultrathin Black Phosphorus FETs--Part II: Model Validation Against Numerical and Experimental Data*. IEEE Transactions on Electron Devices, **2020**, (67), 1. DOI: [10.1109/TED.2019.2955651](https://doi.org/10.1109/TED.2019.2955651) **DMR-1420013**
6. Ren, X.; Wang, Y.; Xie, Z.; Xue, F.; **Leighton, C.; Frisbie, C.D.** *Gate-Tuned Insulator-Metal Transition in Electrolyte-Gated Transistors Based on Tellurene*. Nano Lett., **2019**, 19 (7), 4738-4744. DOI: [10.1021/acs.nanolett.9b01827](https://doi.org/10.1021/acs.nanolett.9b01827) **DMR-1420013****

IRG-1 Publications resulting from PARTIAL MRSEC Support

7. †Wu, R.J.; Udyavara, S.; Ma, R.; Wang, Y.; Chhowalla, M.; **Biol, T.; Koester, S.J.**; Neurock, M.; **Mkhoyan, K.A.** *Visualizing the metal-Mo S₂ contacts in two-dimensional field-effect transistors with atomic resolution*. Phys. Rev. Materials, **2019**, 3 (11), 111001. DOI: [10.1103/PhysRevMaterials.3.111001](https://doi.org/10.1103/PhysRevMaterials.3.111001) **Collaboration with IRG-2. DMR-1420013**
8. Yi, H.T.; Rangan, S.; Tang, B.; **Frisbie, D.**; Bartynski, R.A.; Gartstein, Y.N.; Podzorov, V. *Electric-field effect on photoluminescence of lead-halide perovskites*. Materials Today, **2019**, 28, 31-39. DOI: [10.1016/j.mattod.2019.01.003](https://doi.org/10.1016/j.mattod.2019.01.003) **DMR-1420013**
9. †Yu, G.; Xia, D.D.; Pelc, D.; He, R.H.; Kaneko, N.H.; Sasagawa, T.; Li, Y.; Zhao, X.; Barišić, N.; Shekhter, A.; **Greven, M.** *Universal precursor of superconductivity in the cuprates*. Phys. Rev. B, **2019**, 99 (21), 214502. DOI: [10.1103/PhysRevB.99.214502](https://doi.org/10.1103/PhysRevB.99.214502) **DMR-1420013**
10. †Yun, H.; Prakash, A.; **Jalan, B.**; Jeong, J.S.; **Mkhoyan, K.A.** *STEM beam channeling in BaSnO₃/LaAlO₃ perovskite bilayers and visualization of 2D misfit dislocation network*. Ultramicroscopy, **2020**, 208, 112863. DOI: [10.1016/j.ultramic.2019.112863](https://doi.org/10.1016/j.ultramic.2019.112863) **Collaboration with IRG-2. DMR-1420013**

11. Yue, J.; Thoutam, L.R.; Prakash, A.; Wang, T.; **Jalan, B.** *Unraveling the effect of electron-electron interaction on electronic transport in La-doped SrSnO₃ films.* Appl. Phys. Lett., **2019**, *115* (8), 082102. DOI: [10.1063/1.5113522](https://doi.org/10.1063/1.5113522) **DMR-1420013**
12. Truttman, T.; Prakash, A.; Yue, J.; Mates, T.E.; **Jalan, B.** *Dopant solubility and charge compensation in La-doped SrSnO₃ films.* Appl. Phys. Lett., **2019**, *115* (15), 152103 DOI: [10.1063/1.5119272](https://doi.org/10.1063/1.5119272) **DMR-1420013**
13. Prakash, A.; **Jalan, B.** *Wide Bandgap Perovskite Oxides with High Room-Temperature Electron Mobility.* Adv. Mater. Interfaces, **2019**, *6* (15), 1900479. DOI: [10.1002/admi.201900479](https://doi.org/10.1002/admi.201900479) **DMR-1420013**
14. Yun, H.; Ghosh, S.; Golani, P.; **Koester, S.J.; Mkhoyan, K.A.** *Layer-Dependence of Dielectric Response and Water-Enhanced Ambient Degradation of Highly-Anisotropic Black As.* ACS Nano, **2020**. DOI: [10.1021/acsnano.0c01506](https://doi.org/10.1021/acsnano.0c01506) **Collaboration with IRG-2. DMR-1420013**
15. Voigt, B.; Moore, W.; Manno, M.A.; Walter, J.; Jeremiason, J.D.; Aydil, E.S.; **Leighton, C.** *Transport Evidence for Sulfur Vacancies as the Origin of Unintentional n-Type Doping in Pyrite FeS₂* ACS Appl. Mater. Interfaces, **2019**, *11* (17), 15552-15563. DOI: [10.1021/acsaami.9b01335](https://doi.org/10.1021/acsaami.9b01335) **Collaboration with IRG-2. DMR-1420013**
16. †Ma, R.; Zhang, H.; Yoo, Y.; Degregorio, Z.P.; Jin, L.; Golani, P.; Ghasemi Azadani, J.; **Low, T.**; Johns, J.; Bendersky, L.A.; Davydov, A.V.; **Koester, S.J.** *MoTe₂ Lateral Homo Junction Field-Effect Transistors Fabricated using Flux-Controlled Phase Engineering.* ACS Nano, **2019**, *13* (7), 8035-8046. DOI: [10.1021/acsnano.9b02785](https://doi.org/10.1021/acsnano.9b02785) **Collaboration with SEED. DMR-1420013**
17. †Prakash, A.; Quackenbush, N.F.; Yun, H.; Held, J.; Wang, T.; Truttman, T.; Ablett, J.M.; Weiland, C.; Lee, T.L.; Woicik, J.C.; **Mkhoyan, K.A.; Jalan, B.** *Separating Electrons and Donors in BaSnO₃ via Band Engineering.* Nano Lett., **2019**, *19*, 8920-8927. DOI: [10.1021/acs.nanolett.9b03825](https://doi.org/10.1021/acs.nanolett.9b03825) **Collaboration with IRG-2. DMR-1420013**

IRG-1 Publications resulting from the USE OF SHARED FACILITIES

18. Cao, M.; Hyun, W.J.; **Francis, L.F.; Frisbie, C.D.** *Inkjet-printed, self-aligned organic Schottky diodes on imprinted plastic substrates.* Flex. Print. Electron., **2020**, *5* (1), 015006. DOI: [10.1088/2058-8585/ab670a](https://doi.org/10.1088/2058-8585/ab670a) **Collaboration with IRG-2. MRSEC PROGRAM**
19. †Xie, Z.; Baldea, I.; **Frisbie, C.D.** *Energy Level Alignment in Molecular Tunnel Junctions by Transport and Spectroscopy: Self-Consistency for the Case of Alkyl Thiols and Dithiols on Ag, Au, and Pt Electrodes.* J. Am. Chem. Soc., **2019**, *141* (45), 18182-18192. DOI: [10.1021/jacs.9b08905](https://doi.org/10.1021/jacs.9b08905) **MRSEC PROGRAM**
20. Wang, Y.; Udyavara, S.; Neurock, M.; **Frisbie, D.** *Field Effect Modulation of Electrocatalytic Hydrogen Evolution at Back-Gated Two-Dimensional MoS₂ Electrodes.* Nano Lett., **2019**, *19* (9), 6118-6123. DOI: [10.1021/acs.nanolett.9b02079](https://doi.org/10.1021/acs.nanolett.9b02079) **DMR-1420013**
21. Chaturvedi, V.; Walter, J.; Paul, A.; Grutter, A.; Kirby, B.; Jeong, J.S.; Zhou, H.; Zhang, Z.; Yu, B.; **Greven, M.; Mkhoyan, A.; Birol, T.; Leighton, C.** *Strain-induced majority carrier inversion in ferromagnetic epitaxial LaCoO_{3-δ} thin films.* Phys. Rev. Materials, **2020**, *4* (3). DOI: [10.1103/PhysRevMaterials.4.034403](https://doi.org/10.1103/PhysRevMaterials.4.034403) **Collaboration with IRG-2. DMR-1420013**
22. Thoutam, L.R.; Yue, J.; Xu, P.; **Jalan, B.** *Hopping transport in SrTiO₃ / Nd_{1-x}TiO₃ / SrTiO₃ heterostructures.* Phys. Rev. Materials, **2019**, *3* (6), 065006. DOI: [10.1103/PhysRevMaterials.3.065006](https://doi.org/10.1103/PhysRevMaterials.3.065006) **MRSEC PROGRAM**
23. Cai, X.; Ayino, Y.; Yue, J.; Xu, P.; **Jalan, B.; Pribyl, V.** *Disentangling spin-orbit coupling and local magnetism in a quasi-two-dimensional electron system.* Phys. Rev. B, **2019**, *100* (8), 081402. DOI: [10.1103/PhysRevB.100.081402](https://doi.org/10.1103/PhysRevB.100.081402) **Collaboration with SEED. DMR-1420013**

24. †Alaan, U.S.; Wong, F.J.; Ditto, J.J.; Robertson, A.W.; Lindgren, E.; Prakash, A.; **Haugstad, G.**; Shafer, P.; N'Diaye, A.T.; Johnson, D.; Arenholz, E.; **Jalan, B.**; Browning, N.D.; Suzuki, Y. *Magnetism and transport in transparent high-mobility BaSnO₃ films doped with La, Pr, Nd, and Gd*. Phys. Rev. Materials, **2019**, 3 (12), 124402. DOI: [10.1103/PhysRevMaterials.3.124402](https://doi.org/10.1103/PhysRevMaterials.3.124402)
MRSEC PROGRAM
25. Su, Q.; **Koester, S.J.** *Understanding Sources of Electrical Disorder in Graphene Grown by Chemical Vapor Deposition for Wafer-Scale Device Applications*. ACS Appl. Nano Mater., **2019**, 2 (6), 3426-3433. DOI: [10.1021/acsnm.9b00350](https://doi.org/10.1021/acsnm.9b00350) **DMR-1420013**
26. Robbins, M.C.; Golani, P.; **Koester, S.J.** *Right-Angle Black Phosphorus Tunneling Field Effect Transistor*. IEEE Electron Device Letters, **2019**, 40 (12), 8865564, 1988-1991. DOI: [10.1109/LED.2019.2946763](https://doi.org/10.1109/LED.2019.2946763) **DMR-1420013**
27. Zhen, X.V.; Swanson, E.G.; Nelson, J.T.; Zhang, Y.; Su, Q.; **Koester, S.J.**; Buhlmann, P. *Noncovalent Monolayer Modification of Graphene Using Pyrene and Cyclodextrin Receptors for Chemical Sensing*. ACS Appl. Nano Mater., **2018**, 1 (6), 2718-2726. DOI: [10.1021/acsnm.8b00420](https://doi.org/10.1021/acsnm.8b00420) **DMR-1420013**
28. Hu, J.; Stecklein, G.; Deen, D.A.; Su, Q.; Crowell, P.A.; **Koester, S.J.** *Scaling of the Nonlocal Spin and Baseline Resistances in Graphene Lateral Spin Valves*. IEEE Transactions on Electron Devices, **2019**, 66 (11), 8871329, 5003-5010. DOI: [10.1109/TED.2019.2943350](https://doi.org/10.1109/TED.2019.2943350) **DMR-1420013**
29. †Watts, J.D.; O'Brien, L.; Jeong, J.S.; **Mkhoyan, K.A.**; Crowell, P.A.; **Leighton, C.** *Magnetic impurities as the origin of the variability in spin relaxation rates in Cu-based spin transport devices*. Phys. Rev. Materials, **2019**, 3 (12), 124409. DOI: [10.1103/PhysRevMaterials.3.124409](https://doi.org/10.1103/PhysRevMaterials.3.124409)
Collaboration with IRG-2. MRSEC PROGRAM

IRG-2 Publications resulting from PRIMARY MRSEC Support

30. Dwyer, J.D.; Diaz, E.J.; Webber, T.E.; Katzenberg, A.; Modestino, M.A.; **Aydil, E.S.** *Quantum confinement in few layer SnS nanosheets*. Nanotechnology, **2019**, 30 (24), 245705. DOI: [10.1088/1361-6528/ab0e3e](https://doi.org/10.1088/1361-6528/ab0e3e) **DMR-1420013**
31. Li, C.; Lee, A.L.; Chen, X.; Pomerantz, W.C.; **Haynes, C.L.**; **Hogan, C.J.** *Multidimensional Nanoparticle Characterization through Ion Mobility-Mass Spectrometry*. Anal. Chem., **2020**, 92 (3), 2503-2510. DOI: [10.1021/acs.analchem.9b04012](https://doi.org/10.1021/acs.analchem.9b04012) **DMR-1420013**
32. †Hunter, K.I.; Bedford, N.; Schramke, K.; **Kortshagen, U.R.** *Probing Dopant Locations in Silicon Nanocrystals via High Energy X-ray Diffraction and Reverse Monte Carlo Simulation*. Nano Lett., **2020**, 20 (2), 852-859. DOI: [10.1021/acs.nanolett.9b03025](https://doi.org/10.1021/acs.nanolett.9b03025) **DMR-1420013**
33. Zhi, B.; Yang, Y.; Hudson-smith, N.V.; **Kortshagen, U.R.**; **Haynes, C.L.** *Bacterial Toxicity of Germanium Nanocrystals Induced by Doping with Boron and Phosphorus*. ACS Appl. Nano Mater., **2019**, 2 (8), 4744-4755. DOI: [10.1021/acsnm.9b00525](https://doi.org/10.1021/acsnm.9b00525) **DMR-1420013****
34. Greenberg, B.L.; Robinson, Z.L.; Ayino, Y.; Held, J.T.; Peterson, T.A.; **Mkhoyan, K.A.**; **Pribiag, V.S.**; **Aydil, E.S.**; **Kortshagen, U.R.** *Metal-insulator transition in a semiconductor nanocrystal network*. Science Advances, **2019**, 5 (8), eaaw1462. DOI: [10.1126/sciadv.aaw1462](https://doi.org/10.1126/sciadv.aaw1462)
Collaboration with SEED. DMR-1420013**
35. Sammon, M.; **Shklovskii, B.I.** *Attraction of indirect excitons in van der Waals heterostructures with three semiconducting layers*. Phys. Rev. B, **2019**, 99 (16), 165403. DOI: [10.1103/PhysRevB.99.165403](https://doi.org/10.1103/PhysRevB.99.165403) **DMR-1420013****
36. Huang, Y.; **Shklovskii, B.I.** *Anderson transition in three-dimensional systems with non-Hermitian disorder*. Phys. Rev. B, **2019**, 101, 014204, DOI: [10.1103/PhysRevB.101.014204](https://doi.org/10.1103/PhysRevB.101.014204)
DMR-1420013**

37. Huang, Y.; **Shklovskii, B.I.** *Isotropically conducting (hidden) quantum Hall stripe phases in a two-dimensional electron gas.* Phys. Rev. B, **2020**, *101*, 161302(R). DOI: [10.1103/PhysRevB.101.161302](https://doi.org/10.1103/PhysRevB.101.161302) **DMR-1420013**
38. Beaudette, C.A.; **Wang, X.**; **Kortshagen, U.R.** *Nanocrystal-based inorganic nanocomposites: A new paradigm for plasma-produced optoelectronic thin films.* Plasma Processes and Polymers, **2020**, *17*, 5. DOI: [10.1002/ppap.202000002](https://doi.org/10.1002/ppap.202000002) **DMR-1420013**

IRG-2 Publications resulting from PARTIAL MRSEC Support

39. Hill, S.K.; Connell, R.; Held, J.; Peterson, C.; **Francis, L.**; Hillmyer, M.A.; **Ferry, V.E.**; **Kortshagen, U.** *Poly(methyl methacrylate) Films with High Concentrations of Silicon Quantum Dots for Visibly Transparent Luminescent Solar Concentrators.* ACS Appl. Mater. Interfaces, **2020**, *12* (4), 4572-4578. DOI: [10.1021/acsami.9b22903](https://doi.org/10.1021/acsami.9b22903) **Collaboration with SEED. DMR-1420013**
40. Ghosh, S.; Chen, X.; Li, C.; Olson, B.A.; **Hogan, C.J.** *Fragmentation and film growth in supersonic nanoaggregate aerosol deposition.* AIChE Journal, **2019**, e16874. DOI: [10.1002/aic.16874](https://doi.org/10.1002/aic.16874) **DMR-1420013**
41. Held, J.T.; Yun, H.; **Mkhoyan, K.A.** *Simultaneous multi-region background subtraction for core-level EEL spectra.* Ultramicroscopy, **2020**, *210*, 112919. DOI: [10.1016/j.ultramic.2019.112919](https://doi.org/10.1016/j.ultramic.2019.112919) **DMR-1420013**
42. Fan, Y.; Li, H.; Dc, M.; Peterson, T.; Held, J.; Sahu, P.; Chen, J.; Zhang, D.; **Mkhoyan, A.**; Wang, J. *Spin pumping and large field-like torque at room temperature in sputtered amorphous WTe_{2-x} films.* APL Materials, **2020**, *8* (4), 041102. DOI: [10.1063/1.5124688](https://doi.org/10.1063/1.5124688) **DMR-1420013**
43. Akia, M.; **Mkhoyan, A.**; Lozano, K. *Synthesis of multiwall α - Fe_2O_3 hollow fibers via a centrifugal spinning technique.* Materials Science and Engineering: C, **2019**, *102*, 552-557. DOI: [10.1016/j.msec.2019.04.085](https://doi.org/10.1016/j.msec.2019.04.085) **DMR-1420013, DMR-1523577 (PREM)**
44. Sammon, M.; Fu, X.; Huang, Y.; Zudov, M.A.; **Shklovskii, B.I.**; Gardner, G.C.; Watson, J.D.; Manfra, M.J.; Baldwin, K.W.; Pfeiffer, L.N.; West, K.W. *Resistivity anisotropy of quantum Hall stripe phases.* Phys. Rev. B, **2019**, *10* (24), 241303. DOI: [10.1103/PhysRevB.100.241303](https://doi.org/10.1103/PhysRevB.100.241303) **DMR-1420013**
45. Lattery, D.M.; Zhu, J.; Huang, D.; **Wang, X.** *Ultrafast thermal and magnetic characterization of materials enabled by the time-resolved magneto-optical Kerr effect.* **2020**, Nanoscale Energy Transport (book chapter 9). DOI: [10.1088/978-0-7503-1738-2ch9](https://doi.org/10.1088/978-0-7503-1738-2ch9) **DMR-1420013**

IRG-2 Publications resulting from the USE OF SHARED FACILITIES

46. Pang, V.; Thompson, Z.J.; Joly, G.D.; **Bates, F.S.**; **Francis, L.F.** *Adhesion Strength of Block Copolymer Toughened Epoxy on Aluminum.* ACS Applied Polymer Materials, **2020**, *2* (2), 464-474. DOI: [10.1021/acsapm.9b00909](https://doi.org/10.1021/acsapm.9b00909) **Collaboration with IRG-3. MRSEC PROGRAM**
47. Keller, D.J.; Jochem, K.S.; Suszynski, W.J.; **Francis, L.F.** *Near-IR sintering of conductive silver nanoparticle ink with in situ resistance measurement.* Journal of Coatings Technology and Research, **2019**, *16* (6), 1699-1705. DOI: [10.1007/s11998-019-00268-5](https://doi.org/10.1007/s11998-019-00268-5) **MRSEC PROGRAM**
48. Gao, Z.; Ring, H.L.; Sharma, A.; Namsrai, B.; Tran, N.; Finger, E.B.; Garwood, M.; **Haynes, C.L.**; Bischof, J.C. *Preparation of Scalable Silica-Coated Iron Oxide Nanoparticles for Nanowarming.* Advanced Science, **2020**, *7* (4), 1901624. DOI: [10.1002/advs.201901624](https://doi.org/10.1002/advs.201901624) **MRSEC PROGRAM**
49. Clement, P.L.; Kuether, J.E.; Borgatta, J.R.; Buchman, J.T.; Cahill, M.S.; Qiu, T.A.; Hamers, R.J.; Feng, Z.V.; **Haynes, C.L.** *Cobalt Release from a Nanoscale Multiphase Lithiated Cobalt Phosphate Dominates Interaction with *Shewanella oneidensis* MR-1 and *Bacillus subtilis* SB491.*

Chemical research in toxicology, **2020**, *33* (3), 806-816. DOI: [10.1021/acs.chemrestox.9b00465](https://doi.org/10.1021/acs.chemrestox.9b00465)
MRSEC PROGRAM

50. Buchman, J.T.; Bennett, E.A.; Wang, C.; Abbaspour Tamijani, A.; Bennett, J.W.; Hudson, B.G.; Green, C.M.; Clement, P.L.; Zhi, B.; Henke, A.H.; Laudadio, E.D.; Mason, S.E.; Hamers, R.J.; Klaper, R.D.; **Haynes, C.L.** *Nickel enrichment of next-generation NMC nanomaterials alters material stability, causing unexpected dissolution behavior and observed toxicity to: S. oneidensis MR-1 and D. magna.* Environ. Sci.: Nano, **2020**, *7* (2), 571-587. DOI: [10.1039/c9en01074b](https://doi.org/10.1039/c9en01074b) **MRSEC PROGRAM**
51. Mitchell, S.L.; Hudson-Smith, N.V.; Cahill, M.S.; Reynolds, B.N.; Frand, S.D.; Green, C.M.; Wang, C.; Hang, M.N.; Hernandez, R.T.; Hamers, R.J.; Feng, Z.V.; **Haynes, C.L.**; Carlson, E.E. *Chronic exposure to complex metal oxide nanoparticles elicits rapid resistance in: Shewanella oneidensis MR-1.* Chem. Sci., **2019**, *10* (42), 9768-9781. DOI: [10.1039/c9sc01942a](https://doi.org/10.1039/c9sc01942a) **MRSEC PROGRAM**
52. Kang, H.; Long, D.J.; **Haynes, C.L.** *Preparation of Colloidally Stable Positively Charged Hollow Silica Nanoparticles: Effect of Minimizing Hydrolysis on ζ Potentials.* Langmuir, **2019**, *35* (24), 7985-7994. DOI: [10.1021/acs.langmuir.9b01042](https://doi.org/10.1021/acs.langmuir.9b01042) **MRSEC PROGRAM**
53. Kang, H.; **Haynes, C.L.** *Interactions between Silica-Coated Gold Nanorod Substrates and Hydrophobic Analytes in Colloidal Surface-Enhanced Raman Spectroscopy.* J. Phys. Chem. C, **2019**, *123* (40), 24685-24697. DOI: [10.1021/acs.jpcc.9b06044](https://doi.org/10.1021/acs.jpcc.9b06044) **DMR-1420013**
54. Ethridge, A.L.; Gallagher, M.J.; Hudson-Smith, N.V.; Finley, D.; Ahsan, A.; Howard Fairbrother, D.; **Haynes, C.L.**; Hamers, R.J.; Curry, M.L. *Facile benchtop reactor design using dendrimer-templating technology for the fabrication of polyethyleneimine-coated CuO nanoparticles on the gram scale.* J. Vac. Sci. Technol. A, **2019**, *37* (4), 041402. DOI: [10.1116/1.5089593](https://doi.org/10.1116/1.5089593) **MRSEC PROGRAM**
55. Buchman, J.T.; Pho, T.; Rodriguez, R.S.; Feng, Z.V.; **Haynes, C.L.** *Coating iron oxide nanoparticles with mesoporous silica reduces their interaction and impact on S. oneidensis MR-1.* Chemosphere, **2019**, *237*, 124511. DOI: [10.1016/j.chemosphere.2019.124511](https://doi.org/10.1016/j.chemosphere.2019.124511) **MRSEC PROGRAM**
56. Williams, D.N.; Pramanik, S.; Brown, R.P.; Zhi, B.; McIntire, E.; Hudson-smith, N.V.; **Haynes, C.L.**; Rosenzweig, Z. *Adverse Interactions of Luminescent Semiconductor Quantum Dots with Liposomes and Shewanella oneidensis.* ACS Appl. Nano Mater., **2018**, *1* (9), 4788-4800. DOI: [10.1021/acsanm.8b01000](https://doi.org/10.1021/acsanm.8b01000) **DMR-1420013**
57. †Qiao, Y.; Andrews, A.J.; Christen, C.E.; Olson, B.A.; Khariwala, S.; MacLachan, B.; **Hogan, C.J.** *Morphological characterization of particles emitted from monopolar electrosurgical pencils.* Journal of Aerosol Science, **2020**, *142*, 105512. DOI: [10.1016/j.jaerosci.2020.105512](https://doi.org/10.1016/j.jaerosci.2020.105512) **DMR-1420013**
58. Li, Z.; **Kortshagen, U.R.** *Aerosol-phase synthesis and processing of luminescent silicon nanocrystals.* Chem. Mater., **2019**, *31* (20), 8451-8458. DOI: [10.1021/acs.chemmater.9b02743](https://doi.org/10.1021/acs.chemmater.9b02743) **MRSEC PROGRAM**
59. Reifsnnyder Hickey, D.; Azadani, J.G.; Richardella, A.R.; Kally, J.C.; Lee, J.S.; Chang, H.; Liu, T.; Wu, M.; Samarth, N.; **Low, T.**; **Mkhoyan, A.** *Structure and basal twinning of topological insulator Bi₂Se₃ grown by MBE onto crystalline Y₃Fe₅O₁₂.* Phys. Rev. Mater., **2019**, *3* (6), 061201. DOI: [10.1103/PhysRevMaterials.3.061201](https://doi.org/10.1103/PhysRevMaterials.3.061201) **Collaboration with SEED. DMR-1420013**
60. Reifsnnyder Hickey, D.; Wu, R.J.; Lee, J.S.; Azadani, J.G.; Grassi, R.; Dc, M.; Wang, J.P.; **Low, T.**; Samarth, N.; **Mkhoyan, K.A.** *Large-scale interlayer rotations and Te grain boundaries in (Bi,Sb)₂Te₃ thin films.* Phys. Rev. Materials, **2020**, *4* (1), 011201. DOI: [10.1103/PhysRevMaterials.4.011201](https://doi.org/10.1103/PhysRevMaterials.4.011201) **Collaboration with SEED. DMR-1420013**

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64. Sethuraman, V.; **Dorfman, K.D.** *Simulating precursor steps for fibril formation in methylcellulose solutions*. *Phys. Rev. Materials*, **2019**, *3* (5), 055601. DOI: [10.1103/PhysRevMaterials.3.055601](https://doi.org/10.1103/PhysRevMaterials.3.055601) **DMR-1420013****
65. Zuniga, L.; Gonzalez, G.; Chavez, R.O.; Myers, J.C.; **Lodge, T.P.**; Alcoutlabi, M. *Centrifugally Spun α -Fe₂O₃/TiO₂/Carbon Composite Fibers as Anode Materials for Lithium-Ion Batteries*. *Applied Sciences (Switzerland)*, **2019**, *9* (19), 4032. DOI: [10.3390/app9194032](https://doi.org/10.3390/app9194032) **DMR-1420013, DMR-1523577 (PREM)**
66. Tan, Z.; Jiang, Y.; Zhang, W.; Karls, L.; **Lodge, T.P.**; **Reineke, T.M.** *Polycation Architecture and Assembly Direct Successful Gene Delivery: Micelleplexes Outperform Polyplexes via Optimal DNA Packaging*. *J. Am. Chem. Soc.*, **2019**, *141* (40), 15804-15817. DOI: [10.1021/jacs.9b06218](https://doi.org/10.1021/jacs.9b06218) **DMR-1420013****
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75. Lee, B.; Onbulak, S.; Xu, Y.; Topolkarayev, V.; McEneaney, R.; **Bates, F.S.**; Hillmyer, M.A. *Investigation of Micromechanical Behavior and Voiding of Polyethylene Terephthalate/Polyethylene- stat-methyl Acrylate Blends during Tensile Deformation.* *Ind. Eng. Chem. Res.*, 2019, 58 (16), 6402-6412. DOI: [10.1021/acs.iecr.8b06362](https://doi.org/10.1021/acs.iecr.8b06362) **MRSEC PROGRAM**
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94. Pham, H.Q.; **Holmes, R.J.**; **Aydil, E.**; **Gagliardi, L.** *Lead-free double perovskites $Cs_2InCuCl_6$ and $(CH_3NH_3)_2InCuCl_6$: electronic, optical, and electrical properties*. *Nanoscale*, **2019**, 23, DOI: [10.1039/C9NR01645G](https://doi.org/10.1039/C9NR01645G) **DMR-1420013****

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97. Reisbick, S.; Zhang, Y.; **Flannigan, D.J.** *Influence of Discrete Defects on Observed Acoustic-Phonon Dynamics in Layered Materials Probed with Ultrafast Electron Microscopy*. *J. Phys. Chem. A*, **2020**, 124, 9, 1877-1884. DOI: [10.1021/acs.jpca.9b12026](https://doi.org/10.1021/acs.jpca.9b12026) **DMR-0819885, DMR-1420013**
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114. Chen, S.; Drehmel, J.R.; Penn, R.L. *Facile Synthesis of Monodispersed Ag NPs in Ethylene Glycol Using Mixed Capping Agents*. *ACS Omega*, **2020**, *5* (11), 6069-6073. DOI: [10.1021/acsomega.9b04492](https://doi.org/10.1021/acsomega.9b04492) **MRSEC PROGRAM**
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MRSEC-supported Patents

2019-2020

Patent Applications

None

Patents Granted

None

Patents Licensed

None