

LIST OF MRSEC-SUPPORTED PUBLICATIONS

2023–2024 [56]

March 1, 2023 – February 29, 2024

IRG-1 [6]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [4]

1. C.A. D'Ambra, M. Czuczola, P.T. Getty, E.A. Murphy, A. Abdilla, S. Biswas, J.M. Mecca, T.D. Bekemeier, S. Swier, C.J. **Hawker**, C.M. **Bates**, Versatile synthesis of siloxane-based graft copolymers with tunable grafting density, *J. Polym. Sci.* **62** (2024) 92–101. DOI: 10.1002/pol.20230615
2. G.H. **Fredrickson**, Desperately seeking soft structures, *PNAS* **120** (2023) e2318123120. DOI: 10.1073/pnas.2318123120
3. E.A. Murphy, S.J. Skala, D. Kottage, P.A. Kohl, Y. Li, C. Zhang, C.J. **Hawker**, C.M. **Bates**, Accelerated discovery and mapping of block copolymer phase diagrams, *Phys. Rev. Mater.* **8** (2024) 015602. DOI: 10.1103/PhysRevMaterials.8.015602
4. S. Oh, P.H. Nguyen, T.M. Tran, A.J. DeStefano, K. Tagami, D. Yuan, A. Nikolaev, M. Condarcore, S. Han, J. **Read de Alaniz**, M.L. **Chabinyk**, Interfacial doping of semiconducting polymers with phenothiazine-based polymeric ionic liquids, *J. Mater. Chem. C* **11** (2023) 15435–15442. DOI: 10.1039/D3TC03176D

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [2]

5. Y. Okayama, T. Eom, M. Czuczola, A. Abdilla, J.R. Blankenship, K.R. Albanese, J. **Read de Alaniz**, C.M. **Bates**, C.J. **Hawker**, Heterotelechelic silicones: Facile synthesis and functionalization using silane-based initiators, *Macromolecules* **56** (2023) 8806–8812. DOI: 10.1021/acs.macromol.3c01802
6. C. Tobar, K. Albanese, R. Chaklashiya, A. Equbal, C. **Hawker**, S. Han, Multi electron spin cluster enabled dynamic nuclear polarization with sulfonated BDPA, *J. Phys. Chem. Lett.* **14** (2023) 11640–11650. DOI: 10.1021/acs.jpcclett.3c02428

IRG-2 [4]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [3]

7. A.L. Chau, C.E.R. Edwards, M.E. **Helgeson**, A.A. **Pitenis**, Designing superlubricious hydrogels from spontaneous peroxidation gradients, *ACS Appl. Mater. Interfaces* **15** (2023) 43075–43086. DOI: 10.1021/acsami.3c04636

8. A.L. Chau, C.D. Pugsley, M.E. Miyamoto, Y. Tang, C.D. Eisenbach, T.E. Mates, C.J. **Hawker**, M.T. **Valentine**, A.A. **Pitenis**, pH-dependent friction of polyacrylamide hydrogels, *Tribol. Lett.* **71** (2023) 108. DOI: 10.1007/s11249-023-01779-4
9. C.E.R. Edwards, K.L. Lakkis, Y. Luo, M.E. **Helgeson**, Coacervate or precipitate? Formation of non-equilibrium microstructures in coacervate emulsions, *Soft Matter* **19** (2023) 8849–8862. DOI: 10.1039/D3SM00901G

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [1]

10. Y. Kwon, S. Singh, D. Rodriguez, A.L. Chau, A.A. **Pitenis**, A.W. De Tomaso, M.T. **Valentine**, Mechanical resilience of the sessile tunicate *Botryllus schlosseri*, *J. Exp. Biol.* **226** (2023) jeb245124. DOI: 10.1242/jeb.245124

SEED [0]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [0]

None

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-2308708 [0]

None

SHARED FACILITIES [46]

11. K.R. Albanese, P.T. Morris, J. **Read de Alaniz**, C.M. **Bates**, C.J. **Hawker**, Controlled-radical polymerization of α -lipoic acid: A general route to degradable vinyl copolymers, *J. Am. Chem. Soc.* **145** (2023) 22728–22734. DOI: 10.1021/jacs.3c08248
12. P.I. Babb, S.F. Ahmadi, F. Brent, R. Gans, M. Aceves Lopez, J. Song, Q. Wang, B. Zou, X. Zuo, A. Strom, J. Nolt, T. Susko, K. Fields, Y. Zhu, Salt-rejecting continuous passive solar thermal desalination via convective flow and thin-film condensation, *Cell Rep. Phys. Sci.* **4** (2023) 101682. DOI: 10.1016/j.xcrp.2023.101682
13. M.W. Berkow, H. Gwak, M.N. Idso, M.B. Schmithorst, B.E. Rhodes, B.D. Price, D.S. Gianola, S. Han, B.F. Chmelka, Co-assembly of functionally active proteorhodopsin membrane protein molecules in mesostructured silica–surfactant films, *Chem. Mater.* **35** (2023) 8502–8516. DOI: 10.1021/acs.chemmater.3c01303
14. J.R. Chamorro, A.R. Jackson, A.K. Watkins, R. **Seshadri**, S.D. Wilson, Magnetic order in the $S_{\text{eff}}=1/2$ triangular-lattice compound NdCd_3P_3 , *Phys. Rev. Mater.* **7** (2023) 094402. DOI: 10.1103/PhysRevMaterials.7.094402
15. J.R. Chamorro, J.L. Zuo, E.N. Bassegy, A.K. Watkins, G. Zhu, A. Zohar, K.E. Wyckoff, T.L. Kinnibrugh, S.H. Lapidus, S. Stemmer, R.J. Clément, S.D. Wilson, R. **Seshadri**, Soft-

- chemical synthesis, structure evolution, and insulator-to-metal transition in pyrochlore-like λ - RhO_2 , *Chem. Mater.* **36** (2024) 1547–1558. DOI: 10.1021/acs.chemmater.3c02814
16. Y.-J. Choi, S.J. Warnock, N. Alizadeh, P.H. Nguyen, D. Kottage, O. Phillips, Z. Chen, M.L. **Chabiny**, C.M. **Bates**, Acid-sensitive molecular glasses as removable thin-film protective layers, *Chem. Mater.* **35** (2023) 10078–10085. DOI: 10.1021/acs.chemmater.3c02102
 17. A.J. Cooper, D.J. Grzetic, K.T. Delaney, G.H. **Fredrickson**, Investigating microstructure evolution in block copolymer membranes, *J. Chem. Phys.* **160** (2024) 074903. DOI: 10.1063/5.0188196
 18. W.S. Cunningham, J. Shin, T. Lei, T.J. Rupert, D.S. Gianola, High-throughput assessment of the microstructural stability of segregation-engineered nanocrystalline Al-Ni-Y alloys, *Materialia* **32** (2023) 101940. DOI: 10.1016/j.mtla.2023.101940
 19. N.M. della Ventura, C.Q. Dong, S.A. Messina, R.R. Collino, G.H. Balbus, S.P. Donegan, J.D. Miller, D.S. Gianola, M.R. Begley, Heterogeneity in millimeter-scale Ti-6Al-4V lattice primitives: Challenges in defining effective properties for metamaterial design, *Mater. Des.* **238** (2024) 112695. DOI: 10.1016/j.matdes.2024.112695
 20. H. Doré, A.R. Eisenberg, E.N. Junkins, E.G. Wilbanks, Targeted hypermutation of putative antigen sensors in multicellular bacteria, *PNAS* **121** (2024) e2316469121. DOI: 10.1073/pnas.2316469121
 21. D. Gao, S. Wilken, A.B.N. Nguyen, G.R. Abraham, T. Liedl, O.A. **Saleh**, Controlling the size and adhesion of DNA droplets using surface-enriched DNA molecules, *Soft Matter* **20** (2024) 1275–1281. DOI: 10.1039/D3SM01264F
 22. J.U. Garcia, D.R. Tree, A. Bagoyo, T. Iwama, K.T. Delaney G.H. **Fredrickson**, Coarsening dynamics of ternary polymer solutions with mobility and viscosity contrasts, *J. Chem. Phys.* **159** (2023) 214904. DOI: 10.1063/5.0173992
 23. K.A. Heom, C. Wangsanuwat, L.V. Butkovich, S.C. Tam, A.R. Rowe, M.A. O'Malley, S.S. Dey, Targeted rRNA depletion enables efficient mRNA sequencing in diverse bacterial species and complex co-cultures, *Methods Protoc.* **8** (2023) e00281-23. DOI: 10.1128/msystems.00281-23
 24. A. Hopkins, B. Loewe, M. Chiang, D. Marenduzzo, M.C. **Marchetti**, Motility induced phase separation of deformable cells, *Soft Matter* **19** (2023) 8172–8178. DOI: 10.1039/D3SM01059G
 25. E.T. Hughes, C. Shang, J. Selvidge, D. Jung, Y. Wan, R.W. Herrick, J.E. Bowers, K. Mukherjee, Gradual degradation in InAs quantum dot lasers on Si and GaAs, *Nanoscale* **16** (2024) 2966–2973. DOI: 10.1039/D3NR05311C
 26. M. Huo, J.G. Hu, D.R. Clarke, Covalent adaptable networks with rapid UV response based on reversible thiol–ene reactions in silicone elastomers, *Macromolecules* **56** (2023) 9107–9116. DOI: 10.1021/acs.macromol.3c01841
 27. H.S. Inbar, D.Q. Ho, S. Chatterjee, A.N. Engel, S. Khalid, C.P. Dempsey, M. Pendharkar, Y.H. Chang, S. Nishihaya, A.V. Fedorov, D. Lu, M. Hashimoto, D. Read, A. Janotti, C.J. Palmstrøm, Tuning the band topology of GdSb by epitaxial strain, *APL Mater.* **11** (2023) 111106. DOI: 10.1063/5.0155218

28. J.P. Jahnke, D. Kim, D.J. Wildemuth, J. Nolla, M.W. Berkow, H. Gwak, S. Neyshtadt, T. Segal-Peretz, G.L. Frey, B.F. Chmelka, Mesostructured materials with controllable long-range orientational ordering and anisotropic properties, *Adv. Mater.* **35** (2023) 2306800. DOI: 10.1002/adma.202306800
29. D.K. Jangid, N.R. Brodnik, M.P. Echlin, C. Gudavalli, C. Levenson, T.M. Pollock, S.H. Daly, B.S. Manjunath, Q-RBSA: high-resolution 3D EBSD map generation using an efficient quaternion transformer network, *npj Comput. Mater.* **10** (2024) 27. DOI: 10.1038/s41524-024-01209-6
30. W. Ji, W-R. Jian, Y. Su, S. Xu, I.J. Beyerlein, Role of stacking fault energy in confined layer slip in nanolaminated Cu, *J. Mater. Sci.* **59** (2024) 4775–4787. DOI: 10.1007/s10853-023-08779-8
31. S. Jiao, D.C. Robinson Brown, M.S. **Shell**, Relationships between water’s structure and solute affinity at polypeptoid brush surfaces, *Langmuir* **40** (2024) 761–771. DOI: 10.1021/acs.langmuir.3c02971
32. M.R. Jones, L.T.W. Fey, I.J. Beyerlein, High temperature dislocation glide in the MoNbTi refractory multiprincipal element alloy, *Phys. Rev. Mater.* **8** (2024) 013604. DOI: 10.1103/PhysRevMaterials.8.013604
33. M.R. Jones, L.T.W. Fey, I.J. Beyerlein, Phase-field dislocation dynamics simulations of temperature-dependent glide mechanisms in niobium, *Comput. Mater. Sci.* **232** (2024) 112652. DOI: 10.1016/j.commatsci.2023.112652
34. S. Ju, K.P. Kuzelka, R. Guo, B. Krohn-Hansen, J. Wu, S.K. Nair, Y. **Yang**, A biocatalytic platform for asymmetric alkylation of α -keto acids by mining and engineering of methyltransferases, *Nat. Commun.* **14** (2023) 5704. DOI: 10.1038/s41467-023-40980-w
35. L. Kautzsch, A.B. Georgescu, D. Puggioni, G. Kent, K.M. Taddei, A. Reilly, R. **Seshadri**, J.M. Rondinelli, S.D. Wilson, Canted antiferromagnetism in polar MnSiN₂ with high Néel temperature, *Phys. Rev. Materials* **7** (2023) 104406. DOI: 10.1103/PhysRevMaterials.7.104406
36. G.T. Kent, J. Zhuang, K.R. Albanese, A. Zohar, E. Morgan, A. Kallistova, L. Kautzsch, A.A. Mikhailovsky, P. Vishnoi, R. **Seshadri**, A.K. Cheetham, Hybrid iodide perovskites of divalent alkaline earth and lanthanide elements, *J. Am. Chem. Soc.* **145** (2023) 27850–27856. DOI: 10.1021/jacs.3c11494
37. T.S. Kraft, E. Seabright, S. Alami, S.M. Jenness, P. Hooper, B. Beheim, H. Davis, D.K. Cummings, D.E. Rodriguez, M. Gutierrez Cayuba, E. Miner, X. de Lamballerie, L. Inchauste, S. Priet, B.C. Trumble, J. Stieglitz, H. Kaplan, M.D. Gurven, Metapopulation dynamics of SARS-CoV-2 transmission in a small-scale Amazonian society, *PLoS Biol.* **21** (2023) e3002108. DOI: 10.1371/journal.pbio.3002108
38. X. Lei, A. Canestraight, V. Vlcek, Exceptional spatial variation of charge injection energies on plasmonic surfaces, *J. Phys. Chem. Lett.* **14** (2023) 8470–8476. DOI: 10.1021/acs.jpcclett.3c02223
39. Y. Li, M.P.A. Fisher, Decodable hybrid dynamics of open quantum systems with Z₂ symmetry, *Phys. Rev. B* **108** (2023) 214302. DOI: 10.1103/PhysRevB.108.214302

40. E.E. Morgan, G.T. Kent, A. Zohar, A. O'Dea, G. Wu, A.K. Cheetham, R. **Seshadri**, Hybrid and inorganic vacancy-ordered double perovskites A_2WCl_6 , *Chem. Mater.* **35** (2023) 7032–7038. DOI: 10.1021/acs.chemmater.3c01300
41. E.E. Morgan, A. Zohar, S. Lipkin, B. Monserrat, S. Vaidyanathan, D. Loeffler, R. Zhang, K. Schierle-Arndt, A.K. Cheetham, R. **Seshadri**, Screening aluminum-based compounds as low- κ dielectrics for high-frequency applications, *Chem. Mater.* **36** (2024) 1228–1237. DOI: 10.1021/acs.chemmater.3c01975
42. S.G. Nagella, S.C. **Takatori**, Colloidal transport phenomena in dynamic, pulsating porous materials, *AIChE* **69** (2023) e18215. DOI: 10.1002/aic.18215
43. M. Nguyen, K. Shen, N. Sherck, S. Köhler, R. Gupta, K.T. Delaney, M.S. **Shell**, G.H. **Fredrickson**, A molecularly informed field-theoretic study of the complexation of polycation PDADMA with mixed micelles of sodium dodecyl sulfate and ethoxylated surfactants, *Eur. Phys. J. E* **46** (2023) 75. DOI: 10.1140/epje/s10189-023-00332-4
44. L. Patra, B. Liao, Indirect exchange interaction leads to large lattice contribution to magnetocaloric entropy change, *Phys. Rev. Lett.* **131** (2023) 066703. DOI: 10.1103/PhysRevLett.131.066703
45. J.A. Peterson, N.M. Neris, J. **Read de Alaniz**, Tethered together: DASA design towards aqueous compatibility, *Chem. Sci.* **14** (2023) 13025. DOI: 10.1039/d3sc02835f
46. H. Robotjazi, T. Battsengel, J. Finzel, P. Tieu, M. Xu, A.S. Hoffman, J. Qi, S.R. Bare, X. Pan, B.F. Chmelka, N.J. Halas, P. Christopher, Dynamic behavior of platinum atoms and clusters in the native oxide layer of aluminum nanocrystals, *ACS Nano* **18** (2024) 6638–6649. DOI: 10.1021/acsnano.3c12869
47. M. Saber, S.S. Behara, A. Van der Ven, Redox mechanisms, structural changes, and electrochemistry of the Wadsley–Roth $Li_xTiNb_2O_7$ electrode material, *Chem. Mater.* **35** (2023) 9657–9668. DOI: 10.1021/acs.chemmater.3c02003
48. M. Saber, C. Reynolds, J. Li, T.M. Pollock, A. Van der Ven, Chemical and structural factors affecting the stability of Wadsley–Roth block phases, *Inorg. Chem.* **62** (2023) 17317–17332. DOI: 10.1021/acs.inorgchem.3c02595
49. M.B. Schmithorst, S. Prasad, A. Moini, B.F. Chmelka, Direct detection of paired aluminum heteroatoms in chabazite zeolite catalysts and their significance for methanol dehydration reactivity, *J. Am. Chem. Soc.* **145** (2023) 18215–18220. DOI: 10.1021/jacs.3c05708
50. M. Seifrid, A. Karki, H. Wakidi, H. Vezin, C. Welton, G.C. Bazan, B.F. Chmelka, T-Q. **Nguyen**, G.N.M. Reddy, Importance of short-range order in governing thin film morphology and electronic properties of polymeric organic semiconductors, *Chem. Mater.* **36** (2024) 1214–1227. DOI: 10.1021/acs.chemmater.3c01931
51. T.L.S. Wong, L. Bildsten, The asteroseismological richness of RCB and dLHdC stars, *Astrophys. J.* **962** (2024) 20. DOI: 10.3847/1538-4357/ad0cfa
52. G.C. Wu, R. Deshmukh, A. Trainor, A. Uppal, A.F.M.K. Chowdhury, C. Baez, E. Martin, J. Higgins, A. Mileva, K. Ndhlukula, Avoiding ecosystem and social impacts of hydropower, wind, and solar in Southern Africa's low-carbon electricity system, *Nat. Commun.* **15** (2024) 1083. DOI: 10.1038/s41467-024-45313-z

53. Y. Xu, S.C. **Takatori**, Nonequilibrium interactions between multi-scale colloids regulate the suspension microstructure and rheology, *Soft Matter* **19** (2023) 8531–8541. DOI: 10.1039/D3SM00947E
54. H. Yang, R. Deshmukh, S. Suh, Global transcontinental power pools for low-carbon electricity, *Nat. Commun.* **14** (2023) 8350. DOI: 10.1038/s41467-023-43723-z
55. J. Yuan, Y. Chen, B. Liao, Lattice dynamics and thermal transport in semiconductors with anti-bonding valence bands, *J. Am. Chem. Soc.* **145** (2023) 18506–18515. DOI: 10.1021/jacs.3c05091
56. K. Zhao, Z. Yang, J. Yang, X. Li, C.D. Quintanilla, L. Zhang, Desymmetrization and parallel kinetic resolution of 1-ethynylcyclobutanols via asymmetric cooperative gold catalysis, *J. Am. Chem. Soc.* **145** (2023) 27205–27210. DOI: 10.1021/jacs.3c09288