

LIST OF MRSEC-SUPPORTED PUBLICATIONS

2020-2021 [232]

March 1, 2020 – February 28, 2021

IRG-1 [15]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [8]

1. X. Chen, I. Krivenko, M.B. Stone, A.I. Kolesnikov, D. Reznik, K.S. Bedell, F. Lechermann, S.D. **Wilson**, Unconventional Hund metal in a weak itinerant ferromagnet, *Nat. Commun.* **11** (2020) 3076. DOI: 10.1038/s41467-020-16868-4
2. J.A. Cooley, J.D. Bocarsly, E.C. Schueller, E.E. Levin, E.E. Rodriguez, A. Huq, S.H. Lapidus, S.D. **Wilson**, R. **Seshadri**, Evolution of noncollinear magnetism in magnetocaloric MnPtGa, *Phys. Rev. Mater.* **4** (2020) 044405. DOI: 10.1103/PhysRevMaterials.4.044405
3. Y.M. Eggeler, E.E. Levin, F. Wang, D.A. Kitchaev, A. **Van der Ven**, R. **Seshadri**, T.M. **Pollock**, D.S. **Gianola**, Interfacial structure and strain accommodation in two-phase NbCo_{1.2}Sn Heusler intermetallics, *Phys. Rev. Mater.* **4** (2020) 093601. DOI: 10.1103/PhysRevMaterials.4.093601
4. D.A. Kitchaev, J. Vinckeviciute, A. **Van der Ven**, Delocalized metal-oxygen π -redox is the origin of anomalous nonhysteretic capacity in Li-Ion and Na-Ion cathode materials, *J. Am. Chem. Soc.* **143** (2021) 1908–1916. DOI: 10.1021/jacs.0c10704
5. E.E. Levin, D.A. Kitchaev, Y.M. Eggeler, J.A. Mayer, P. Behera, D.S. **Gianola**, A. **Van der Ven**, T.M. **Pollock**, R. **Seshadri**, Influence of plastic deformation on the magnetic properties of Heusler MnAu₂Al, *Phys. Rev. Mater.* **5** (2021) 014408. DOI: 10.1103/PhysRevMaterials.5.014408
6. A.S. Sukhanov, A. Heinemann, L. Kautzsch, J.D. Bocarsly, S.D. **Wilson**, C. Felser, D.S. Inosov, Robust metastable skyrmions with tunable size in the chiral magnet FePtMo₃N, *Phys. Rev. B* **102** (2020) 140409. DOI: 10.1103/PhysRevB.102.140409
7. F. Wang, M. Echlin, J. Shin, B. Bammes, M. De Graef, T. **Pollock**, D. **Gianola**, Opportunities for electron backscattered diffraction enabled by direct electron detection, *Microsc. Microanal.* **26** (2020) 1164. (Suppl 2). DOI: 10.1017/S1431927620017171
8. F. Wang, M.P. Echlin, A.A. Taylor, J. Shin, B. Bammes, B.D.A. Levin, M. De Graef, T.M. **Pollock**, D.S. **Gianola**, Electron backscattered diffraction using a new monolithic direct detector: High resolution and fast acquisition, *Ultramicroscopy* **220** (2021) 113160. DOI: 10.1016/j.ultramic.2020.113160

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [7]

9. J.D. Bocarsly, M.D. Johannes, S.D. **Wilson**, R. **Seshadri**, Magnetostructural coupling from competing magnetic and chemical bonding effects, *Phys. Rev. Res.* **2** (2020) 042048. DOI: 10.1103/PhysRevResearch.2.042048
10. W. Cai, J.D. Bocarsly, A. Gomez, R.J. Letona Lee, A. Metta-Magaña, R. **Seshadri**, L. Echegoyen, High blocking temperatures for DyScS endohedral fullerene single-molecule magnets, *Chem. Sci.* **11** (2020) 13129–13136. DOI: 10.1039/D0SC05265E
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14. J. Shin, G. Richter, D.S. **Gianola**, Suppressing instabilities in defect-scarce nanowires by controlling the energy release rate during incipient plasticity, *Mater. Des.* **189** (2020) 108460. DOI: 10.1016/j.matdes.2019.108460
15. D.J. Strickland, D.S. Melchert, J.L. Hor, C.P. Ortiz, D. Lee, D.S. **Gianola**, Microscopic origin of shear banding as a localized driven glass transition in compressed colloidal pillars, *Phys. Rev. E* **102** (2020) 032605. DOI: 10.1103/PhysRevE.102.032605

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16. S.D. Jones, N.S. Schauer, G.H. **Fredrickson**, R.A. **Segalman**, The role of polymer-ion interaction strength on the viscoelasticity and conductivity of solvent-free polymer electrolytes, *Macromolecules* **53** (2020) 10574–10581. DOI: 10.1021/acs.macromol.0c02233
17. H. Nie, N.S. Schauer, N.D. Dolinski, Z. Geng, S. Oh, M.L. **Chabinyc**, C.J. **Hawker**, R.A. **Segalman**, J. **Read de Alaniz**, The role of anions in light-driven conductivity in diarylethene-containing polymeric ionic liquids, *Polym. Chem.* **12** (2021) 719–724. DOI: 10.1039/D0PY01603A
18. H. Nie, N.S. Schauer, N.D. Dolinski, J. Hu, C.J. **Hawker**, R.A. **Segalman**, J. **Read de Alaniz**, Light-controllable ionic conductivity in a polymeric ionic liquid, *Angew. Chem. Int. Ed.* **59** (2020) 5123–5128. DOI: 10.1002/anie.201912921

19. H. Nie, N.S. Schausser, J.L. Self, T. Tabassum, S. Oh, Z. Geng, S.D. Jones, M.S. Zayas, V.G. Reynolds, M.L. **Chabiny**, C.J. **Hawker**, S. **Han**, C.M. **Bates**, R.A. **Segalman**, J. **Read de Alaniz**, Light-switchable and self-healable polymer electrolytes based on dynamic diarylethene and metal-ion coordination, *J. Am. Chem. Soc.* **143** (2021) 1562–1569. DOI: 10.1021/jacs.0c11894
20. S. Oh, A. Nikolaev, K. Tagami, T. Tran, D. Lee, S. Mukherjee, R.A. **Segalman**, S. **Han**, J. **Read de Alaniz**, M.L. **Chabiny**, Redox-active polymeric ionic liquids with pendant N-substituted phenothiazine, *ACS Appl. Mater. Interfaces* **13** (2021) 5319–5326. DOI: 10.1021/acsami.0c20462
21. V.G. Reynolds, S. Oh, R. Xie, M.L. **Chabiny**, Model for the electro-mechanical behavior of elastic organic transistors, *J. Mater. Chem. C* **8** (2020) 9276–9285. DOI: 10.1039/D0TC01181A
22. N.S. Schausser, D.J. Grzetic, T. Tabassum, G.A. Kliegle, M.L. Le, E.M. Susca, S. Antoine, T.J. Keller, K.T. Delaney, S. **Han**, R. **Seshadri**, G.H. **Fredrickson**, R.A. **Segalman**, The role of backbone polarity on aggregation and conduction of ions in polymer electrolytes, *J. Am. Chem. Soc.* **142** (2020) 7055–7065. DOI: 10.1021/jacs.0c00587
23. N.S. Schausser, A. Nikolaev, P.M. Richardson, S. Xie, K. Johnson, E.M. Susca, H. Wang, R. **Seshadri**, R.J. **Clément**, J. **Read de Alaniz**, R.A. **Segalman**, Glass transition temperature and ion binding determine conductivity and lithium-ion transport in polymer electrolytes, *ACS Macro Lett.* **10** (2021) 104–109. DOI: 10.1021/acsmacrolett.0c00788

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [4]

24. A. Abdilla, N.D. Dolinski, P. de Roos, J.M. Ren, E. van der Woude, S.E. Seo, M.S. Zayas, J. Lawrence, J. **Read de Alaniz**, C.J. **Hawker**, Polymer stereocomplexation as a scalable platform for nanoparticle assembly, *J. Am. Chem. Soc.* **142** (2020) 1667–1672. DOI: 10.1021/jacs.9b10156 (Published 29 January 2020. This paper was missed when compiling last year’s report.)
25. S.J. Bailey, E.H. Discekici, S.M. Barbon, S.N. Nguyen, C.J. **Hawker**, J. **Read de Alaniz**, Norbornadiene chain-end functional polymers as stable, readily available precursors to cyclopentadiene derivatives, *Macromolecules* **53** (2020) 4917–4924. DOI: 10.1021/acs.macromol.0c00967
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IRG-3 [25]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [11]

28. J.H. Bernstein, E. Filippidi, J.H. **Waite**, M.T. **Valentine**, Effects of sea water pH on marine mussel plaque maturation, *Soft Matter* **16** (2020) 9339–9346. DOI: 10.1039/D0SM01237H
29. (a) A.L. Chau, J. Rosas, G.D. Degen, L.K. Månsson, J. Chen, E. Valois, A.A. **Pitenis**, Aqueous surface gels as low friction interfaces to mitigate implant-associated inflammation, *J. Mater. Chem. B* **8** (2020) 6782. DOI: 10.1039/d0tb00582g
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30. N. Corrigan, K. Jung, G. Moad, C.J. **Hawker**, K. Matyjaszewski, C. Boyer, Reversible-deactivation radical polymerization (Controlled/living radical polymerization): From discovery to materials design and applications, *Prog. Polym. Sci.* **111** (2020) 101311. DOI: 10.1016/j.progpolymsci.2020.101311
31. T.R. Cristiani, E. Filippidi, R.L. Behrens, M.T. **Valentine**, C.D. Eisenbach, Tailoring the toughness of elastomers by incorporating ionic cross-linking, *Macromolecules* **53** (2020) 4099–4109. DOI: 10.1021/acs.macromol.0c00500
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33. L.F. Gockowski, N.D. Dolinski, R. Chavez, N. Cohen, F. Eisenreich, S. Hecht, R.M. **McMeeking**, C.J. **Hawker**, M.T. **Valentine**, Engineering crack tortuosity in printed polymer–polymer composites through ordered pores, *Mater. Horiz.* **7** (2020) 1854. DOI: 10.1039/d0mh00331j
34. R.M. **McMeeking**, A. Lucantonio, G. Noselli, V.S. Deshpande, On polymer network rupture in gels in the limit of very slow straining or a very slow crack propagation rate, *J. Mech. Phys. Solids* **136** (2020) 103754. DOI: 10.1016/j.jmps.2019.103754
35. S.E. Seo, C.J. **Hawker**, The beauty of branching in polymer science, *Macromolecules* **53** (2020) 3257–3261. DOI: 10.1021/acs.macromol.0c00286
36. W.R. Wonderly, T.R. Cristiani, K.C. Cunha, G.D. Degen, J-E. **Shea**, J.H. **Waite**, Dueling backbones: Comparing peptoid and peptide analogues of a mussel adhesive protein, *Macromolecules* **53** (2020) 6767–6779. DOI: 10.1021/acs.macromol.9b02715
37. R.B. Zerdan, Z. Geng, B. Narupai, Y.J. Diaz, M.W. Bates, D.S. Laitar, B. Souvagya, A.K. Van Dyk, C.J. **Hawker**, Efficient synthesis of branched poly(acrylic acid) derivatives via postpolymerization modification, *J. Polym. Sci.* **58** (2020) 1989–1997. DOI: 10.1002/pol.20200287
38. C. Zhang, M.W. Bates, Z. Geng, A.E. Levi, D. Vigil, S.M. Barbon, T. Loman, K.T. Delaney, G.H. **Fredrickson**, C.M. **Bates**, A.K. Whittaker, C.J. **Hawker**, Rapid generation of block copolymer libraries using automated chromatographic separation, *J. Am. Chem. Soc.* **142** (2020) 9843–9849. DOI: 10.1021/jacs.0c04028

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39. A. Arsiccio, J. McCarty, R. Pisano, J-E. **Shea**, Heightened cold-denaturation of proteins at the ice–water interface, *J. Am. Chem. Soc.* **142** (2020) 5722–5730. DOI: 10.1021/jacs.9b13454
40. N. Cohen, C.D. Eisenbach, Molecular mechanics of beta-sheets, *ACS Biomater. Sci. Eng.* **6** (2020) 1940–1949. DOI: 10.1021/acsbio.9b01983
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42. S. Dadashi-Silab, I-H. Lee, A. Anastasaki, F. Lorandi, B. Narupai, N.D. Dolinski, M.L. Allegrezza, M. Fantin, D. Konkolewicz, C.J. **Hawker**, K. Matyjaszewski, Investigating temporal control in photoinduced atom transfer radical polymerization, *Macromolecules* **53** (2020) 5280–5288. DOI: 10.1021/acs.macromol.0c00888
43. E. Hopkins, E. Valois, A. Stull, K. Le, A.A. **Pitenis**, M.Z. Wilson, An optogenetic platform to dynamically control the stiffness of collagen hydrogels, *ACS Biomater. Sci. Eng.* **7** (2021) 408–414. DOI: 10.1021/acsbio.0c01488
44. Y. Kim, H. Park, A. Abdilla, H. Yun, J. Han, G.E. Stein, C.J. **Hawker**, B.J. Kim, Chain-length-dependent self-assembly behaviors of discrete conjugated oligo(3-hexylthiophene), *Chem. Mater.* **32** (2020) 3597–3607. DOI: 10.1021/acs.chemmater.0c00869
45. J. Lee, M.M. Sroda, Y. Kwon, S. El-Arid, S. Seshadri, L.F. Gockowski, E.W. Hawkes, M.T. **Valentine**, J. **Read de Alaniz**, Tunable photothermal actuation enabled by photoswitching of donor–acceptor Stenhouse adducts, *ACS Appl. Mater. Interfaces* **12** (2020) 54075–54082. DOI: 10.1021/acscami.0c15116
46. P.H. Nguyen, A. Ramamoorthy, B.R. Sahoo, J. Zheng, P. Faller, J.E. Straub, L. Dominguez, J-E. **Shea**, N.V. Dokholyan, A. De Simone, B. Ma, R. Nussinov, S. Najafi, S.T. Ngo, A. Loquet, M. Chiricotto, P. Ganguly, J. McCarty, M.S. Li, C. Hall, Y. Wang, Y. Miller, S. Melchionna, B. Habenstein, S. Timr, J. Chen, B. Hnath, B. Strodel, R. Kayed, S. Lesné, G. Wei, F. Sterpone, A.J. Doig, P. Derreumaux, Amyloid oligomers: A joint experimental/computational perspective on Alzheimer’s disease, Parkinson’s disease, type II diabetes, and amyotrophic lateral sclerosis, *Chem. Rev.* **121** (2021) 2545–2647. DOI: 10.1021/acs.chemrev.0c01122
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49. S. Seshadri, L.F. Gockowski, J. Lee, M. Sroda, M.E. **Helgeson**, J. **Read de Alaniz**, M.T. **Valentine**, Self-regulating photochemical Rayleigh–Bénard convection using a highly-absorbing organic photoswitch, *Nat. Commun.* **11** (2020) 2599. DOI: 10.1038/s41467-020-16277-7
50. J.J. Shin, E.J. Kim, K.H. Ku, Y.J. Lee, C.J. **Hawker**, B.J. Kim, 100th Anniversary of Macromolecular Science Viewpoint: Block copolymer particles: Tuning shape, interfaces, and morphology, *ACS Macro Lett.* **9** (2020) 306–317. DOI: 10.1021/acsmacrolett.0c00020
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52. X. Zhang, M. Vigers, J. McCarty, J.N. Rauch, G.H. **Fredrickson**, M.Z. Wilson, J-E. **Shea**, S. **Han**, K.S. Kosik, The proline-rich domain promotes Tau liquid–liquid phase separation in cells, *J. Cell. Biol.* **219** (2020) e202006054. DOI: 10.1083/jcb.202006054

SEED [6]

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53. J. Brooks, G. Weng, S. Taylor, V. **VIček**, Stochastic many-body perturbation theory for Moiré states in twisted bilayer phosphorene, *J. Phys.: Condens. Matter* **32** (2020) 234001. DOI: 10.1088/1361-648X/ab6d8c
54. B.B. Haidet, E.T. Hughes, K. **Mukherjee**, Nucleation control and interface structure of rocksalt PbSe on (001) zincblende III-V surfaces, *Phys. Rev. Mater.* **4** (2020) 033402. DOI: 10.1103/PhysRevMaterials.4.033402
55. B-J. Jeon, D.T. Nguyen, O.A. **Saleh**, Sequence-controlled adhesion and microemulsification in a two-phase system of DNA liquid droplets, *J. Phys. Chem. B* **124** (2020) 8888–8895. DOI: 10.1021/acs.jpcc.0c06911
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57. M.E. Turiansky, C.G. **Van de Walle**, Boron dangling bonds in a monolayer of hexagonal boron nitride, *J. Appl. Phys.* **129** (2021) 064301. DOI: 10.1063/5.0040780

b. Partial MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [1]

58. H. Polshyn, J. Zhu, M.A. Kumar, Y. Zhang, F. Yang, C.L. Tschirhart, M. Serlin, K. Watanabe, T. Taniguchi, A.H. MacDonald, A.F. **Young**, Electrical switching of magnetic order in an orbital Chern insulator, *Nature* **588** (2020) 66–70. DOI: 10.1038/s41586-020-2963-8

iSUPERSEED [2]

a. Primary MRSEC Support that Acknowledge the MRSEC Award DMR-1720256 [2]

59. B. Loewe, F. Serafin, S. Shankar, M.J. **Bowick**, M.C. **Marchetti**, Shape and size changes of adherent elastic epithelia, *Soft Matter* **16** (2020) 5282–5293. DOI: 10.1039/D0SM00239A
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None

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61. M. Abdelghany, M.E. Rasekh, U. Madhow, Scalable nonlinear multiuser detection for mmWave massive MIMO, *2020 IEEE 21st International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, May 26–29, 2020, Atlanta, GA. DOI: 10.1109/SPAWC48557.2020.9154238
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