

Steven E. Naleway
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Department of Mechanical Engineering
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EDUCATION

University of California, San Diego (2013 - 2016)

Ph.D. in Materials Science and Engineering received 2016.

Thesis Co-Advisors: Joanna McKittrick (deceased) and Marc A. Meyers

Thesis Title: "[Harnessing Biology for Bioinspired Structural Materials with Intrinsic and Extrinsic Freeze Casting](#)"

Oregon State University (2011 - 2013)

M.S. in Materials Science received 2013.

Thesis Advisor: Jamie J. Kruzic (now at University of New South Wales, Sydney)

Thesis Title: "[Advancing the Understanding of Bulk Metallic Glasses as Structural Materials through Exploration of Mechanical Properties](#)"

Oregon State University (2006 - 2011)

B.S. in Mechanical Engineering received 2011.

EXPERIENCE

University of Utah

Associate Professor, Department of Mechanical Engineering (2022 - present)

Assistant Professor, Department of Mechanical Engineering (2016 - 2022)

Adjunct Professor, Department of Materials Science and Engineering (2019 - present)

Additional Appointments

Courtesy Professor, Knight Campus, University of Oregon (2022 - present)

Visiting Associate Professor, College of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University (2022 - present)

Courtesy Professor, Department of Chemistry, Oregon State University (2022 - present)

HONORS AND AWARDS

Institution; (date)

- [Ig Noble Peace Prize](#), Improbable Research (2021)
- [Acta Biomaterialia Reviewer Award](#), Acta Materialia (2020)
- [MRS Graduate Student Silver Award](#), *Materials Research Society* (2016)
- [MRS Arthur Nowick Graduate Student Award](#), *Materials Research Society* (2016)
- [Edward Alexander Bouchet Graduate Honor Society](#), *Yale University* (2016)
- TMS 2016 Annual Meeting & Exhibition Travel Grant, *TMS Foundation* (2016)

- [Gareth Thomas Materials Excellence Award](#), *University of California, San Diego/Berkeley* (2015)
- [ARCS Scholarship](#), *ARCS Foundation, Inc.* (2015 - 2016)
- [Bernard and Sophia Gordon Engineering Leadership Center Scholar](#), *University of California, San Diego* (2015 - 2016)
- [Peer Mentorship GSA Community Award](#), *University of California, San Diego* (2014 - 2015)
- [Grad SLAM finalist](#), *University of California, San Diego* (Spring 2015)
- Abe Hurlich Award, *ASM International* (2015)
- [GSA Travel Grant](#), *University of California, San Diego* (Winter, Fall 2015)
- Cal RA Fellowship, *University of California, San Diego* (2013 - 2014)
- Materials Science Fellowship, *University of California, San Diego* (2013 - 2014)
- Outstanding Graduate Teaching Assistant, Mechanical Engineering, *Oregon State University* (2012 - 2013)
- Samuel H. and Violet F. Graf Research Fellowship, *Oregon State University* (2012 - 2013)

JOURNAL PUBLICATIONS

[Google Scholar](#)

1. D. L. Porter, E. Hotz, J. Uehling, S. E. Naleway, “A review of the material and mechanical properties of select Ganoderma fungi structures as a source for bioinspiration” *Journal of Materials Science*, in press. DOI: [10.1007/s10853-023-08214-y](https://doi.org/10.1007/s10853-023-08214-y).
2. D. L. Porter, H. Malik, K. Carlson, S. E. Naleway, “Bioinspired hydrophilic and oleophilic absorption media from biotemplated fungi” *Advanced Engineering Materials*, 2023, **25**: p. 2200945. DOI: [10.1002/adem.202200945](https://doi.org/10.1002/adem.202200945).
3. T. J. Yin, S. E. Naleway, “Freeze casting with bioceramics for bone graft substitutes” *Biomedical Materials and Devices*, 2022. DOI: [10.1007/s44174-022-00008-1](https://doi.org/10.1007/s44174-022-00008-1). ***Invited***
4. D. L. Porter, S. E. Naleway, “Hyphal systems and their effect on the mechanical properties of fungal sporocarps” *Acta Biomaterialia*, 2022, **145**: p. 272-282. DOI: [10.1016/j.actbio.2022.04.011](https://doi.org/10.1016/j.actbio.2022.04.011).
5. J. R. Fernquist, H. C. Fu, S. E. Naleway, “Improved structural and mechanical performance of iron oxide scaffolds freeze cast under oscillating magnetic fields” *Ceramics International*, 2022, **48**: p. 15034-15042. DOI: [10.1016/j.ceramint.2022.02.032](https://doi.org/10.1016/j.ceramint.2022.02.032).
6. K. Baskaran, M. Ali, D. L. Porter, K. Gingrich, S. Chong, B. Riley, C. W. Peak, S. E. Naleway, I. Zharov, K. Carlson, “Sol-gel-derived polymer-tailored silica for energy and environmental applications: A review” *Microporous and Mesoporous Materials*, 2022, **336**: p. 111874. DOI: [10.1016/j.micromeso.2022.111874](https://doi.org/10.1016/j.micromeso.2022.111874).
7. C. B. Tanaka, M. Mroz, S. E. Naleway, J. J. Kruzic, “Anisotropic strength and fracture resistance of epoxy-ceramic composite materials produced by ultrasound freeze-casting” *Ceramics International*, 2022, **48**: p. 4904-4910. DOI: [10.1016/j.ceramint.2021.11.027](https://doi.org/10.1016/j.ceramint.2021.11.027).
8. D. L. Porter, A. J. Bradshaw, R. H. Nielsen, P. Newell, B. T. M. Dentinger, S. E. Naleway, “The melanized layer of *Armillaria ostoyae* rhizomorphs: its protective role and functions” *Journal of the Mechanical Behavior of Biomedical Materials*, 2022, **125**: p. 104934. DOI: [10.1016/j.jmbbm.2021.104934](https://doi.org/10.1016/j.jmbbm.2021.104934).
9. Y. Wang, D. L. Porter, S. E. Naleway, P. Newell, “Thermo-mechanical characterization of shale using nanoindentation” *Scientific Reports*, 2021, **11**: p. 18864. DOI: [10.1038/s41598-021-98251-x](https://doi.org/10.1038/s41598-021-98251-x).

10. T. J. Yin, S. Jeyapalina, S. E. Naleway, “Characterization of porous fluorohydroxyapatite bone-scaffolds fabricated using freeze casting” *Journal of the Mechanical Behavior of Biomedical Materials*, 2021 **123**: p. 104717. DOI: [10.1016/j.jmbbm.2021.104717](https://doi.org/10.1016/j.jmbbm.2021.104717).
11. J. Alexander, K. Baskaran, A. Harward, K. Carlson, S. E. Naleway, “Bioinspired aligned magnetic features in aerogels for humidity sensing” *Materials Chemistry and Physics*, 2021, **270**: p. 124852. DOI: [10.1016/j.matchemphys.2021.124852](https://doi.org/10.1016/j.matchemphys.2021.124852). ***Invited***
12. M. Mroz, M. Ali, J. Howard, K. Carlson, S. E. Naleway, “Biotemplating of a highly porous cellulose-silica composite from *Apium graveolens* by a low-toxicity sol-gel technique” *Journal of Materials (JOM)*, 2021, **73**: p. 36-1744. DOI: [10.1007/s11837-021-04658-2](https://doi.org/10.1007/s11837-021-04658-2). ***Invited***
13. S. N. Garner, S. E. Naleway, M. S. Hosseini, C. Acevedo, B. Gludovatz, E. Schaible, J.-Y. Jung, R. O. Ritchie, P. Zavattieri, J. McKittrick, “The role of collagen in the dermal armor of the boxfish” *Journal of Materials Research & Technology*, 2020, **5**: p. 13825-13841. DOI: [10.1016/j.jmrt.2020.09.090](https://doi.org/10.1016/j.jmrt.2020.09.090). ***Invited***
14. Y. Wang, S. E. Naleway, B. Wang, “Biological and bioinspired materials: Structure leading to functional and mechanical performance” *Bioactive Materials*, 2020, **5**: p. 745-757. DOI: [10.1016/j.bioactmat.2020.06.003](https://doi.org/10.1016/j.bioactmat.2020.06.003).
15. M. Mroz, J. Rosenberg, C. Acevedo, J. J. Kruzic, B. Raeymaekers, S. E. Naleway, “Ultrasound freeze-casting of a biomimetic layered microstructure in epoxy-ceramic composite materials to increase strength and hardness” *Materialia*, 2020, **12**: p. 100754. DOI: [10.1016/j.mtla.2020.100754](https://doi.org/10.1016/j.mtla.2020.100754).
16. E. A. Beseris, S. E. Naleway, D. R. Carrier, “Impact protection potential of mammalian hair: Testing the pugilism hypothesis for the evolution of human facial hair” *Integrative Organismal Biology*, 2020, **2**: p. obaa005. DOI: [10.1093/iob/obaa005](https://doi.org/10.1093/iob/obaa005).
17. I. Nelson, J. Varga, P. Wadsworth, M. Mroz, J. J. Kruzic, O. T. Kingstedt, S. E. Naleway, “Helical and Bouligand porous scaffolds fabricated by dynamic low strength magnetic field freeze casting” *Journal of Materials (JOM)* 2020, **72**, p. 1498-1508. DOI: [10.1007/s11837-019-04002-9](https://doi.org/10.1007/s11837-019-04002-9). ***Invited***
18. J. R. Howard, L. Gardner, Z. Saife, A. Geleil, I. Nelson, J. S. Colombo, S. E. Naleway, K. Carlson, “Synthesis and characterization of novel calcium phosphate glass-derived cements for vital pulp therapy” *Journal of Materials Science: Materials in Medicine*, 2020, **31**: p. 12. DOI: [10.1007/s10856-019-6352-5](https://doi.org/10.1007/s10856-019-6352-5).
19. P. Wadsworth, I. Nelson, D. L. Porter, B. Raeymaekers, S. E. Naleway, “Manufacturing bioinspired flexible materials using ultrasound directed self-assembly and 3D printing” *Materials & Design*, 2020, **185**: p. 108243. DOI: [10.1016/j.matdes.2019.108243](https://doi.org/10.1016/j.matdes.2019.108243).
20. I. Nelson, S. E. Naleway, “Intrinsic and extrinsic control of freeze casting” *Journal of Materials Research and Technology*, 2019, **8**: p. 2372-2385. DOI: [10.1016/j.jmrt.2018.11.011](https://doi.org/10.1016/j.jmrt.2018.11.011). ***Invited***
21. I. Nelson, L. Gardner, K. Carlson, S. E. Naleway, “Freeze casting of iron oxide subject to a tri-axial nested Helmholtz-coils driven uniform magnetic field for tailored porous scaffolds” *Acta Materialia*, 2019, **173**: p. 106-116. DOI: [10.1016/j.actamat.2019.05.003](https://doi.org/10.1016/j.actamat.2019.05.003).
22. J.-Y. Jung, S. E. Naleway, Y. N. Maker, K. Y. Kang, J. Lee, S. S. Hur, S. Chien, J. McKittrick, “3D printed templating of extrinsic freeze-casting for macro-micro porous biomaterials” *ACS Biomaterials Science & Engineering*, 2019, **5**: p. 2122-2133. DOI: [10.1021/acsbiomaterials.8b01308](https://doi.org/10.1021/acsbiomaterials.8b01308).
23. J.-Y. Jung, A. Pissarenko, A. A. Trikanad, D. Restrepo, F. Y. Su, A. Marquez, D. Gonzalez, S. E. Naleway, P. Zavattieri, J. McKittrick, “A natural stress deflector on the head? Mechanical

- and functional evaluation of the woodpecker skull bones” *Advanced Theory and Simulations*, 2019, **2**: p. 1800152. DOI: [10.1002/adts.201800152](https://doi.org/10.1002/adts.201800152).
24. P. Niksiar, F. Su, M. B. Frank, T. A. Ogden, S. E. Naleway, M. A. Meyers, J. McKittrick, M. M. Porter, “External field assisted freeze casting” *Ceramics*, 2019, **2**: p. 208-234. DOI: [10.3390/ceramics2010018](https://doi.org/10.3390/ceramics2010018). ***Invited***
 25. I. Nelson, T. A. Ogden, S. A. Khateeb, J. Graser, T. D. Sparks, J. J. Abbott, S. E. Naleway, “Freeze-casting of surface-magnetized iron(II,III) oxide particles in a uniform static magnetic field generated by a Helmholtz coil” *Advanced Engineering Materials*, 2019, **21**: p. 1801092. DOI: [10.1002/adem.201801092](https://doi.org/10.1002/adem.201801092).
 26. T. A. Ogden, M. Prisdrey, I. Nelson, B. Raeymaekers, S. E. Naleway, “Ultrasound freeze casting: Fabricating bioinspired porous scaffolds through combining freeze casting and ultrasound directed self-assembly” *Materials and Design*, 2019, **164**: p. 107561. DOI: [10.1016/j.matdes.2018.107561](https://doi.org/10.1016/j.matdes.2018.107561).
 27. J.-Y. Jung, A. Pissarenko, N. Yaraghi, S. E. Naleway, D. Kisailus, M. A. Meyers, J. McKittrick, “A comparative analysis of the avian skull: Woodpeckers and chickens” *Journal of the Mechanical Behavior of Biomedical Materials*, 2018, **84**: p. 273-280. DOI: [10.1016/j.jmbbm.2018.05.001](https://doi.org/10.1016/j.jmbbm.2018.05.001).
 28. M. B. Frank, S. H. Siu, K. Karandikar, C-H. Liu, S. E. Naleway, M. M. Porter, O. A. Graeve, J. McKittrick, “Synergistic structures from magnetic freeze casting with surface magnetized alumina particles and platelets” *Journal of the Mechanical Behavior of Biomedical Materials*, 2017, **76**: p. 153-163. DOI: [10.1016/j.jmbbm.2017.06.002](https://doi.org/10.1016/j.jmbbm.2017.06.002) ***Invited***
 29. B. Gludovatz, F. Walsh, E. A. Zimmermann, S. E. Naleway, R. O. Ritchie, J. J. Kruzic, “Structure and damage tolerance of coconut shells” *Journal of the Mechanical Behavior of Biomedical Materials*, 2017, **76**: p. 76-84. DOI: [10.1016/j.jmbbm.2017.05.024](https://doi.org/10.1016/j.jmbbm.2017.05.024) ***Invited***
 30. M. B. Frank, S. E. Naleway, T. Haroush, C-H. Liu, S. H. Siu, J. Ng, I. Torres, A. Ismail, K. Karandikar, M. M. Porter, O. A. Graeve, J. McKittrick, “Stiff, porous scaffolds from magnetized ceramic particles aligned by magnetic freeze casting” *Materials Science and Engineering C*, 2017, **77**: p. 484-492. DOI: [10.1016/j.msec.2017.03.246](https://doi.org/10.1016/j.msec.2017.03.246).
 31. S. E. Naleway, C. F. Yu, R. Hsiung, A. Sengupta, P. M. Iovine, J. A. Hildebrand, M. A. Meyers, J. McKittrick, “Bioinspired intrinsic control of freeze cast composites: Harnessing hydrophobic hydration and clathrate hydrates” *Acta Materialia*, 2016, **114**: p. 67-79. DOI: [10.1016/j.actamat.2016.05.019](https://doi.org/10.1016/j.actamat.2016.05.019).
 32. J.-Y. Jung, S. E. Naleway, N. Yaraghi, V. R. Sherman, E. A. Bushong, M. H. Ellisman, D. Kisailus, J. McKittrick, “Structural analysis of the tongue and hyoid apparatus of a woodpecker” *Acta Biomaterialia*, 2016, **37**: p. 1-13. DOI: [10.1016/j.actbio.2016.03.030](https://doi.org/10.1016/j.actbio.2016.03.030).
 33. M. B. Frank, S. E. Naleway, T. S. Wirth, J.-Y. Jung, C. L. Cheung, F. B. Loera, S. Medina, K. N. Sato, J. R. A. Taylor, J. McKittrick, “A protocol for bioinspired design: A ground based sampler based on sea urchin jaws” *Journal of Visualized Experiments*, 2016, (110) p. e53554. DOI: [10.3791/53554](https://doi.org/10.3791/53554).
 34. S. E. Naleway, K. C. Fickas, Y. N. Maker, M. A. Meyers, J. McKittrick, “Reproducibility of ZrO₂-based freeze casting for biomaterials” *Materials Science and Engineering C*, 2016, **61**: p. 105-112. DOI: [10.1016/j.msec.2015.12.012](https://doi.org/10.1016/j.msec.2015.12.012).
 35. S. E. Naleway, J. R. A. Taylor, M. M. Porter, M. A. Meyers, J. McKittrick, “Structure and mechanical properties of selected protective systems in marine organisms” *Materials Science and Engineering C*, 2016, **59**: p. 1143-1167. DOI: [10.1016/j.msec.2015.10.033](https://doi.org/10.1016/j.msec.2015.10.033).

36. S. E. Naleway, M. M. Porter, J. McKittrick, M. A. Meyers, “Structural design elements in biological materials: Application to bioinspiration” *Advanced Materials*, 2015, **27**(37): p. 5455-5476. DOI: [10.1002/adma.201502403](https://doi.org/10.1002/adma.201502403).
37. W. Yang, S. E. Naleway, M. M. Porter, M. A. Meyers, J. McKittrick, “The armored carapace of the boxfish” *Acta Biomaterialia*, 2015, **23**: p. 1-10. DOI: [10.1016/j.actbio.2015.05.024](https://doi.org/10.1016/j.actbio.2015.05.024).
 - Article was featured in a lay summary on STM Digest: “[The Boxfish: a fish that traded speed for armor](#)”.
38. D. Khvostenko, S. Salehi, S. E. Naleway, T. J. Hilton, J. L. Ferracane, J. C. Mitchell, J. J. Kruzic, “Cyclic mechanical loading promotes bacterial penetration along composite restoration marginal gaps” *Dental Materials*, 2015, **31**(6): p. 702-710. DOI: [10.1016/j.dental.2015.03.011](https://doi.org/10.1016/j.dental.2015.03.011).
39. S. E. Naleway, W. Lear, J. J. Kruzic, C. Maughan, “Mechanical properties of suture materials in general and cutaneous surgery” *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 2015, **103**(4): p. 735-742. DOI: [10.1002/jbm.b.33171](https://doi.org/10.1002/jbm.b.33171).
40. S. E. Naleway, C. F. Yu, M. M. Porter, A. Sengupta, P. M. Iovine, M. A. Meyers, J. McKittrick, “Bioinspired composites from freeze casting using clathrate hydrates” *Materials and Design*, 2015, **71**: p. 62-67. DOI: [10.1016/j.matdes.2015.01.010](https://doi.org/10.1016/j.matdes.2015.01.010).
41. Z. Evenson, S. E. Naleway, S. Wei, O. Gross, J. J. Kruzic, I. Gallino, W. Possart, M. Stommel, R. Busch, “ β relaxation and low-temperature aging in a Au-based bulk metallic glass: From elastic properties to atomic-scale structure”, *Physical Review B*, 2014, **89**(17): p. 174204. DOI: [10.1103/PhysRevB.89.174204](https://doi.org/10.1103/PhysRevB.89.174204).
42. B. Gludovatz, S. E. Naleway, R. O. Ritchie, J. J. Kruzic, “Size-dependent fracture toughness of bulk metallic glasses” *Acta Materialia*, 2014, **70**: p. 198-207. DOI: [10.1016/j.actamat.2014.01.062](https://doi.org/10.1016/j.actamat.2014.01.062).
43. S. E. Naleway, R. B. Greene, B. Gludovatz, N. K. N. Dave, R. O. Ritchie, J. J. Kruzic, “A highly fatigue resistant Zr-based bulk metallic glass” *Metallurgical and Materials Transactions A*, 2013, **44**(13): p. 5688-5693. DOI: [10.1007/s11661-013-1923-4](https://doi.org/10.1007/s11661-013-1923-4).

JOURNAL PUBLICATIONS IN REVIEW

None at this time

EDITORIAL ARTICLES

1. D. Restrepo, S. E. Naleway, V. Thomas, H. C. Schniepp, “Advanced manufacturing for biomaterials and biological materials, Part I” *JOM*, 2020, **72**: p. 1151-1153. DOI: [10.1007/s11837-020-04032-8](https://doi.org/10.1007/s11837-020-04032-8).
2. S. E. Naleway, V. Thomas, D. Restrepo, H. C. Schniepp, “Advanced manufacturing for biomaterials and biological materials, Part II” *JOM*, 2020, **72**: p. 1432-1434. DOI: [10.1007/s11837-020-04060-4](https://doi.org/10.1007/s11837-020-04060-4).
3. S. E. Naleway, G. A. Hirata, “Advanced functional and biological materials: A memorial issue dedicated to Professor Joanna McKittrick” *Journal of Materials Research & Technology*, 2021, **10**: p. 709-710. DOI: [10.1016/j.jmrt.2020.12.059](https://doi.org/10.1016/j.jmrt.2020.12.059)

CONFERENCE PRESENTATIONS

Presenter underlined

19 invited presentations; 7 invited presentations with Naleway as the presenter

1. V. Kapsali, C. Hall, S. E. Naleway, “Transitioning to zero waste and net zero: Lessons from biology” *The 92th Textile Institute World Conference*, Huddersfield UK, July 2023.
2. D. L. Porter, B. T. M. Dentinger, S. E. Naleway, “Multi-scale biomechanical analysis of fungal sporocarps and their constitutive components” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
3. D. L. Porter, K. Carlson, S. E. Naleway, “Fungi-inspired absorption materials made using different biotemplating methods” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
4. S. E. Naleway, D. L. Porter, T. J. Yin, J. R. Fernquist, M. A. Schmitz, E. Hotz, “Bioinspired materials inspired by biological structural design elements” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
5. S. E. Naleway, T. J. Yin, J. R. Fernquist, D. L. Porter, M. A. Schmitz, E. Hotz, “Mimicking the structure and properties of bone with freeze casting” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
6. J. R. Fernquist, A. Pourkand, J. J. Abbott, H. C. Fu, S. E. Naleway, “Reinforced freeze-cast ceramics using uniform magnet fields” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
7. Hotz, E., S. E. Naleway, “Microplastic remediation media fabricated with freeze-cast titania” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
8. T. J. Yin, S. Jeyapalina, S. E. Naleway, “Porous, freeze-cast fluorohydroxyapatite and hydroxyapatite-titania composites for biomedical applications” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
9. M. A. Schmitz, S. E. Naleway, “Bioinspired magnetic freeze casting with particles of differing shapes” *2023 TMS Annual Meeting*, San Diego, CA, USA, March 2023.
10. S. E. Naleway, T. J. Yin, J. Fernquist, M. Schmitz, D. L. Porter, E. Hotz, “Mineralized biomaterials from extrinsically-controlled freeze-casting” *MS&T 2022*, Pittsburgh, PA, USA, October 2022. ***Invited***
11. N. Ortiz, B. Csontos, J. Fernquist, N. Na, J. Chang, S. E. Naleway, S. R. Rao, “Polymer-adsorbent composites for enhanced heat and mass transfer” *SHTC 2022*, virtual, July 2022.
12. L. Pinzon, S. E. Naleway, “Bond strength of cements to sound and caries affected teeth” *2022 AADOCR/CADR Annual Meeting & Exhibition*, Atlanta, GA, USA, March 2022.
13. J. Fernquist, H. Fu, S. E. Naleway, “Reinforced freeze-cast structures using uniform magnetic fields” *2022 TMS Annual Meeting*, Anaheim, CA, USA, February 2022.
14. T. J. Yin, S. Jeyapalina, S. E. Naleway, “Use of freeze-casted fluorohydroxyapatite as an osteogenic bone substitute” *2022 TMS Annual Meeting*, Anaheim, CA, USA, February 2022.
15. D. L. Porter, A. J. Bradshaw, R. H. Nielsen, P. Newell, B. T. M. Dentinger, S. E. Naleway, “Properties, mechanics, and material applications of fungi” *2022 TMS Annual Meeting*, Anaheim, CA, USA, February 2022.
16. S. E. Naleway, D. L. Porter, J. Fernquist, T. J. Yin, J. Alexander, M. Mroz, “Bioinspired materials from extrinsically-controlled fabrication techniques” *2022 TMS Annual Meeting*, Anaheim, CA, USA, February 2022.
17. S. E. Naleway, D. L. Porter, J. Fernquist, T. J. Yin, J. Alexander, M. Mroz, “Tailored and bioinspired porous ceramics from extrinsically-controlled freeze casting” *2022 TMS Annual Meeting*, Anaheim, CA, USA, February 2022. ***Invited***
18. S. E. Naleway, D. L. Porter, J. Fernquist, T. J. Yin, M. Schmitz, E. Hotz, J. Alexander, M. Mroz, “Extrinsic control of advanced manufacturing techniques for bioinspired materials”

- ICACC'22*, Daytona Beach, FL, USA, January 2022. (*held virtually - COVID19*)
19. J. Howard, J. Young, J. Colombo, S. E. Naleway, K. Carlson, “Effects of thermal stress on calcium phosphate glass-derived cements for vital pulp therapy” *MS&T21*, Columbus, OH, USA, October 2021.
 20. S. E. Naleway, I. Nelson, T. J. Yin, D. L. Porter, J. Fernquist, J. Alexander, M. Mroz, P. Wadsworth, “Freeze casting of bioinspired materials with extrinsic control techniques” *2021 TMS Annual Meeting*, Orlando, FL, USA, March 2021. (*held virtually - COVID19*)
 21. S. E. Naleway, I. Nelson, T. J. Yin, D. L. Porter, J. Fernquist, J. Alexander, M. Mroz, “Bioinspired freeze casting with extrinsic control techniques” *ICACC'21*, Daytona Beach, FL, USA, February 2021. (*held virtually - COVID19*)
 22. M. S. Hosseini, S. N. Garner, S. E. Naleway, J. Mckittrick, P. Zavattieri, “The boxfish carapace, a simple architecture to control crack propagation” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 23. S. Garner, S. E. Naleway, M. Hosseini, C. Acevedo, B. Gludovatz, E. Schaible, J.-Y. Jung, J. McKittrick, P. Zavattieri, “Collagen’s role in the dermal armor of the boxfish” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 24. S. E. Naleway, I. Nelson, T. J. Yin, D. L. Porter, M. Mroz, P. Wadsworth, M. Mroz, “Bioinspired freeze-cast nanostructured materials templated by energized fields” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020. ***Invited***
 25. L. M. Kochaver, S. G. Freitas, S. E. Naleway, “Using microspheres to understand the effect of particle geometry in freeze casting” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 26. D. L. Porter, A. Bradshaw, B. Dentinger, S. E. Naleway, “Structural and mechanical characterization of quasi-indestructible *Armillaria Ostoyae* Rhizomorphs” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 27. T. J. Yin, K. Carlson, S. E. Naleway, “Microsphere calcium phosphate cements to improve injectability and 3D-printability of dental biomaterials” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 28. M. Mroz, T. A. Ogden, I. Nelson, M. Prsbrey, B. Raeymaekers, S. E. Naleway, “Bioinspired porous materials through ice and ultrasound templating” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 29. J. Howard, L. Gardner, Z. Saifee, I. Nelson, J. Colombo, S. E. Naleway, K. Carlson, “Quick setting dental pulp capping materials made from sodium silicate and calcium phosphate glasses” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 30. I. Nelson, P. Wadsworth, M. Mroz, O. Kingstedt, J. Kruzic, S. E. Naleway, “Fabricating bioinspired helical and Bouligand scaffolds using a tri-axial nested Helmholtz coils-based freeze-casting setup” *2020 TMS Annual Meeting*, San Diego, CA, USA, February 2020.
 31. S. E. Naleway, I. Nelson, T. J. Yin, D. L. Porter, P. Wadsworth, M. Mroz, “Bioinspired advanced ceramics from freeze casting and energized fields” *ICACC'20*, Daytona Beach, FL, USA, January 2020. ***Invited***
 32. S. E. Naleway, I. Nelson, T. J. Yin, M. Mroz, P. Wadsworth, B. Raeymaekers, “Bioinspired extrinsic control of freeze casting for biomaterials” *8th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa Beach, HI, USA, December 2019.
 33. D. L. Porter, A. J. Bradshaw, B. Dentinger, S. E. Naleway, “Relating the intricate structure of quasi-indestructible *Armillaria ostoyae* rhizomorphs to its mechanical properties”

International Mechanical Engineering Congress & Exposition, Salt Lake City, UT, USA, November 2019.

34. M. Mroz, T. A. Ogden, I. Nelson, M. Prisbrey, B. Raeymaekers, S. E. Naleway, “Biomimetic layered structuring of ceramics through ice and ultrasound templating” *International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT, USA, November 2019.
35. S. Freitas, L. Kochaver, J. Varga, P. Wadsworth, M. Mroz, O. T. Kingstedt, J. J. Kruzic, S. E. Naleway, I. Nelson*, “Magnetic freeze-casting with a tri-axial nested Helmholtz coils to fabricate bioinspired porous helical and Bouligand structures” *International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT, USA, November 2019.
36. T. J. Yin, K. Carlson, S. E. Naleway, “Improving calcium phosphate cement injectability and 3D-printability using microspheres for dental biomaterials” *International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT, USA, November 2019.
37. H. T. Phan, P. J. Torres, K. Bohorquez, B. D. L. C. Corona, H. G. L. Juarez, S. E. Naleway, J. M. Powers, L. M. Pinzon, “Bond strength of caries-affected teeth treated with SDF and SDN” *2019 IADR/AADR/CADR General Sessions & Exhibition*, Vancouver, Canada, June 2019.
38. S. Jeyapalina, B. T. Bennett, B. Gociman, J. P. Beck, S. E. Naleway, Agarwal, “Evaluation of porous fluoridated apatites as bone scaffolds” *Plastic Surgery Research Council*, Baltimore, MD, May, 2019.
39. H. T. Phan, P. J. Torres, K. Bohorquez, B. D. L. C. Corona, H. G. L. Juarez, S. E. Naleway, J. M. Powers, L. M. Pinzon, “Bond strength of caries-affected teeth treated with SDF and SDN” *2019 IADR/AADR/CADR General Sessions & Exhibition*, Vancouver, Canada, June 2019.
40. I. Nelson, M. Mroz, A. Yin, P. Wadsworth, S. E. Naleway, “Freeze casting using a tri-axial nested Helmholtz coil to fabricate user-specific porous scaffolds” *2019 MRS Spring Meeting and Exhibition*, Phoenix, AZ, April 2019.
41. S. E. Naleway, I. Nelson, A. Yin, M. Mroz, P. Wadsworth, “Bioinspired extrinsic control of freeze casting” *2019 MRS Spring Meeting and Exhibition*, Phoenix, AZ, April 2019.
42. S. E. Naleway, J. R. Howard, I. Nelson, J. S. Colombo, K. Carlson, “Dental materials through microstructural control of phosphates” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
43. J. R. Howard, I. Nelson, J. S. Colombo, S. E. Naleway, K. Carlson, “Calcium phosphate microspheres: A novel approach to calcium phosphate cements” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
44. M. Mroz, T. A. Ogden, I. Nelson, M. Prisbrey, B. Raeymaekers, S. E. Naleway, “Nanoscale porous bioinspired materials through ice and ultrasound templating” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
45. P. Wadsworth, I. Nelson, T. A. Ogden, S. E. Naleway, “3D printing bioinspired composite materials with ultrasound directed self-assembly” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
46. I. Nelson, J. J. Abbott, S. E. Naleway, “Freeze casting using tri-axial magnetic field control to fabricate materials inspired by bone” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
47. M. S. Hosseini, S. Garner, S. E. Naleway, J. McKittrick, P. D. Zavattieri, “Shear mechanics of the Boxfish hexagonal scute” *2019 TMS Annual Meeting*, San Antonio, TX, USA, March 2019.
48. M. S. Hosseini, S. N. Garner, S. E. Naleway, J. McKittrick, P. D. Zavattieri, “On the mechanics of boxfish structure” *USNC/TAM 2018*, Evanston, IL, June 2018.

49. S. E. Naleway, I. Neslon, T. A. Ogden, “Extrinsic control of freeze casting using energized fields for bioinspired materials” *USNC/TAM 2018*, Evanston, IL, June 2018.
50. S. E. Naleway, I. Nelson, T. A. Ogden, “Porous bioinspired materials through a variety of templating techniques” *2018 TMS Annual Meeting*, Phoenix, AZ, USA, March 2018.
51. G. A. Lang, J. Castro, I. Nelson, S. E. Naleway, C. Gorney, P. M. Iovine, “Synthesis and characterization of porous starch-based adsorbents” *255th American Chemical Society National Meeting & Exposition*, New Orleans, MS, March 2018.
52. M. B. Frank, S. H. Siu, K. Karandikar, C-H. Liu, S. E. Naleway, M. M. Porter, O. A. Graeve, J. McKittrick, “Synergistic structures from magnetic freeze casting with surface magnetized alumina particles and platelets” *2018 TMS Annual Meeting*, Phoenix, AZ, USA, March 2018. ***Invited***
53. S. Broadbent, C. Holdeman, A. Barron, S. E. Naleway, “Characterization and growth of *Montipora capricornis* in a simulated ocean environment” *2018 ACCESS Poster Session*, April 2018.
54. A. Sriram, H. J. Gay, S. E. Naleway, “Analyzing potential biosorbents for the purification of heavy metal ions in wastewater” *University of Utah 15th Annual Undergraduate Research Symposium*, April 2018.
55. I. Nelson, T. A. Ogden, S. A. Khateeb, J. Graser, T. D. Sparks, J. J. Abbott, S. E. Naleway, “Freeze casting of surface-magnetized TiO₂ using a Helmholtz coil inspired by bone” *2018 TMS Annual Meeting*, Phoenix, AZ, USA, March 2018.
56. T. A. Ogden, M. Prsbrey, I. Nelson, B. Raeymaekers, S. E. Naleway, “Freeze casting of bioinspired porous ring structures through ultrasound directed self-assembly” *2018 TMS Annual Meeting*, Phoenix, AZ, USA, March 2018.
57. S. E. Naleway, S. N. Garner, B. Gludovatz, M. S. Hosseini, J.-Y. Jung, C. Avevedo, E. Schaible, R. O. Ritchie, P. D. Zavattieri, M. A. Meyers, J. McKittrick, “Characterizing the collagen structure of the armored carapace of the boxfish” *7th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2017.
58. B. Gludovatz, F. Walsh, E. A. Zimmermann, S. E. Naleway, R. O. Ritchie, J. J. Kruzic, “Multiscale structure and damage tolerance of coconut shells” *7th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2017.
59. S. E. Naleway, “Freeze casting for bioinspired materials with intrinsic and extrinsic control” *ASME SMASIS 2017*, Snowbird, UT, USA, September 2017.
60. S. E. Naleway, “Intrinsic and extrinsic control of bioinspired freeze casting” *PacRim CCGT 2017*, Waikoloa, HI, USA, May 2017. ***Invited***
61. S. E. Naleway, “Fabricating bioinspired materials through intrinsic and extrinsic control of freeze casting” *IBE 2017 Annual Conference*, Salt Lake City, UT, USA, April 2017.
62. C. Fauver, I. Nelson, J. J. Abbott, S. E. Naleway, “Complex structuring of porous ceramic materials by freeze casting under magnetic fields” *University of Utah 14th Annual Undergraduate Research Symposium*, April 2017.
63. S. Tan, T. Ogden, B. Reeder, P. Newell, S. E. Naleway, “3D printed templating, mechanical testing, and computational analysis of porous ceramic structures” *University of Utah 14th Annual Undergraduate Research Symposium*, April 2017.
64. S. E. Naleway, M. A. Meyers, J. McKittrick, “Intrinsic and extrinsic control of bioinspired freeze casting” *2017 TMS Annual Meeting*, San Diego, CA, USA, February 2017.
65. J. McKittrick, S. E. Naleway, M. B. Frank, J.-Y. Jung, F. Y. Su, M. M. Porter, “Bioinspired design strategies” *2017 TMS Annual Meeting*, San Diego, CA, USA, February 2017. ***Invited***

66. J. McKittrick, S. E. Naleway, M. B. Frank, J.-Y. Jung, F. Y. Su, "Preparation and characterization of ceramic scaffolds" *2017 TMS Annual Meeting*, San Diego, CA, USA, February 2017. ***Invited***
67. M. B. Frank, S. H. Siu, S. E. Naleway, C.-H. Liu, K. Karandikar, O. Graeve, J. McKittrick, "Synergistic porous structures from magnetic freeze casting with surface magnetized alumina particles and platelets" *2017 TMS Annual Meeting*, San Diego, CA, USA, February 2017.
68. J.-Y. Jung, A. Pissarenko, S. E. Naleway, K. Kang, N. Yaraghi, E. Bushong, M. Ellisman, D. Kisalius, M. A. Meyers, J. McKittrick, "Avoiding brain injury: A structural role of the frontal overhang on the skull bone of woodpeckers" *2017 TMS Annual Meeting*, San Diego, CA, USA, February 2017.
69. S. E. Naleway, M. A. Meyers, J. McKittrick, "Advanced freeze casting for mimetic bone and biomaterials" *MS&T 2016*, Salt Lake City, UT, USA, October 2016. ***Invited***
70. Y. N. Maker, S. E. Naleway, K. C. Fickas, M. A. Meyers, J. McKittrick, "Reproducibility of ZrO₂ based freeze casting for biomaterials and biomedical implants" *Biomedical Engineering Society Annual Meeting*, Minneapolis, MN, October 2016.
71. S. E. Naleway, M. A. Meyers, J. McKittrick, "Mimicking biomineralization through freeze casting for bioinspired materials" *AACGE 2016*, Fallen Leaf Lake, CA, USA, June 2016. ***Invited***
72. S. E. Naleway, J.-Y. Jung, S. S. Hur, Y. N. Maker, M. Ix, S. Chien, M. A. Meyers, J. McKittrick, "Mimetic bone through 3D printed templating of freeze casting" *UCSD Engineering Expo 2016*, San Diego, CA, USA, April 2016.
73. S. E. Naleway, B. Gludovatz, M. S. Hosseini, J.-Y. Jung, R. O. Ritchie, P. Zavattieri, M. A. Meyers, J. McKittrick, "Why be rigid? Structural analysis of the boxfish carapace" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.
74. S. E. Naleway, J.-Y. Jung, S. S. Hur, Y. N. Maker, K. Y. Kang, M. Ix, S. Chien, M. A. Meyers, J. McKittrick, "3D printed templating of freeze casting for hierarchical mimetic bone" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.
75. S. E. Naleway, J. R. A. Taylor, M. M. Porter, M. A. Meyers, J. McKittrick, "Structure and mechanical properties of selected protective systems in marine organisms" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.
76. J. McKittrick, S. E. Naleway, M. B. Frank, "Influence of mineralized components in biological materials and their bioinspired designs" *13th International Conference on Ceramic Processing Science*, Nara, Japan, May 2016. ***Invited***
77. M. B. Frank, S. H. Siu, J. Ng, A. Ismail, I. Torres, T. Haroush, C.-H. Liu, K. Karandikar, S. E. Naleway, O. A. Graeve, J. McKittrick, "Magnetized materials for bioinspired bone scaffolds" *UCSD Engineering Expo 2016*, San Diego, CA, USA, April 2016.
78. J.-Y. Jung, A. Pissarenko, S. E. Naleway, K. Y. Kang, N. A. Yaraghi, Y. N. Maker, S. H. Siu, V. R. Sherman, D. Kissailus, M. A. Meyers, J. McKittrick, "Avoiding brain injury: A comparative analysis of the woodpecker skull" *UCSD Engineering Expo 2016*, San Diego, CA, USA, April 2016.
79. M. B. Frank, S. E. Naleway, K. N. Sato, S. Herrera, W. Gao, J.-Y. Jung, S. H. Siu, J. Ng, I. Torres, A. Ismail, L. A. Levin, H. D. Espinosa, D. Kisailus, J. McKittrick, "Mechanical and microstructural properties of sea urchin teeth at various ocean depths" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.

80. M. B. Frank, S. E. Naleway, T. Haroush, C. H. Liu, S. H. Siu, J. Ng, I. Torres, A. Ismail, J. McKittrick, "Bioinspired by bone: Magnetized alumina for strengthened porous scaffolds by magnetic freeze casting" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.
81. J.-Y. Jung, S. E. Naleway, V. R. Sherman, K. Y. Kang, N. A. Yaraghi, E. A. Bushong, M. H. Ellisman, D. Kisailus, J. McKittrick, "Comparative analysis of the woodpecker skull" *2016 MRS Spring Meeting*, Phoenix, AZ, USA, March 2016.
82. M. A. Meyers, S. E. Naleway, J. McKittrick, M. M. Porter, "Structural design elements in biological materials: Application to bioinspiration" *2016 TMS Annual Meeting*, Nashville, TN, USA, February 2016. ***Invited***
83. S. E. Naleway, C. F. Yu, R. Hsiong, A. Sengupta, P. M. Iovine, J. Hildebrand, M. A. Meyers, J. McKittrick, "Bioinspired composites through clathrates and hydrates in freeze casting" *2016 TMS Annual Meeting*, Nashville, TN, USA, February 2016.
84. M. B. Frank, J.-Y. Jung, F. Su, W. Huang, S. E. Naleway, J. McKittrick, "Biological materials: How nature works" *2016 BMES Lab Expo*, San Diego, CA, January 2016.
85. M. B. Frank, J.-Y. Jung, F. Su, S. E. Naleway, J. McKittrick, "Bioinspired devices and materials: Learning from nature" *2016 BMES Lab Expo*, San Diego, CA, January 2016.
86. S. E. Naleway, J.-Y. Jung, S. S. Hur, Y. N. Maker, M. Ix, S. Chien, M. A. Meyers, J. McKittrick, "Mimetic bone through 3D printed templating of freeze casting" *6th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2015.
87. J. McKittrick, S. E. Naleway, M. M. Porter, M. A. Meyers, "Structural elements in biological materials with implications for bioinspired design" *6th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2015. ***Invited***
88. M. B. Frank, S. E. Naleway, J.-Y. Jung, J. McKittrick, "Mars urchin: A bioinspired sediment sampler based upon the mouthpiece of a sea urchin" *6th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2015.
89. J.-Y. Jung, S. E. Naleway, N. Yaraghi, V. R. Sherman, E. A. Bushong, M. H. Ellisman, D. Kisailus, J. McKittrick, "Structural analysis of the tongue and hyoid apparatus of a woodpecker" *6th International Conference on Mechanics of Biomaterials and Tissues*, Waikoloa, HI, USA, December 2015.
90. S. E. Naleway, C. F. Yu, R. Hsiong, A. Sengupta, P. M. Iovine, M. M. Porter, M. A. Meyers, J. McKittrick, "Easing the fabrication of bioinspired composites through the use of clathrate hydrates in freeze casting" *UCSD Engineering Expo 2015*, San Diego, CA, USA, April 2015.
91. J. McKittrick, S. E. Naleway, M. B. Frank, K. Novitskaya, "Structural biological materials and bioinspired design strategies" *University of Illinois*, Champaign-Urbana, IL, April 2015.
92. M. B. Frank, S. E. Naleway, J.-Y. Jung, W. Huang, C. L. Cheung, F. B. Loera, S. Medina, T. S. Wirth, K. N. Sato, J. R. A. Taylor, L. A. Levin, J. McKittrick, "Microstructure and bioinspiration application of Aristotle's Lantern, Urchins from the Sea to Mars" *UCSD Engineering Expo 2015*, San Diego, CA, USA, April 2015.
93. J.-Y. Jung, V. Sherman, S. E. Naleway, E. A. Bushong, E. Cory, J. R. A. Taylor, R. Sah, M. H. Ellisman, M. A. Meyers, J. McKittrick, "Structural analysis of the woodpecker tongue and hyoid apparatus" *UCSD Engineering Expo 2015*, San Diego, CA, USA, April 2015.
94. S. E. Naleway, C. F. Yu, R. Hsiong, A. Sengupta, P. M. Iovine, M. M. Porter, M. A. Meyers, J. McKittrick, "Easing the fabrication of bioinspired composites through the use of clathrate hydrates in freeze casting" *2015 TMS Annual Meeting*, Orlando, FL, USA, March 2015.

95. J. J. Kruzic, Z. Evenson, S. E. Naleway, S. Wei, O. Gross, I. Gallino, R. Busch, “Beta relaxation and low temperature aging of a gold based bulk metallic glass” *2015 TMS Annual Meeting*, Orlando, FL, USA, March 2015. ***Invited***
96. M. B. Frank, M. M. Porter, S. E. Naleway, T. Haroush, J. McKittrick, “Surface magnetized colloidal particles aligned by magnetic freeze casting” *2015 TMS Annual Meeting*, Orlando, FL, USA, March 2015.
97. S. E. Naleway, W. Yang, M. M. Porter, M. A. Meyers, J. McKittrick, “Bioinspired protection from the armored carapace of the boxfish” *2015 TMS Annual Meeting*, Orlando, FL, USA, March 2015.
98. J. McKittrick, S. E. Naleway, M. B. Frank, “Energy absorbing mechanisms in natural materials and implications for bioinspired design” *Indian Institute of Science*, Bangalore, India, February 2015. ***Invited***
99. J. McKittrick, S. E. Naleway, M. B. Frank, J.-Y. Jung, “Biological materials science: Structures, mechanical properties and bioinspiration” *Indian Institute of Science*, Bangalore, India, February 2015. ***Invited***
100. J.-Y. Jung, M. B. Frank, S. E. Naleway, J. McKittrick, “Bioinspired materials” *UCSD Biomedical Engineering Society Lab Expo*, San Diego, CA, USA, January 2015.
101. M. B. Frank, S. E. Naleway, J.-Y. Jung, F. Su, J. McKittrick, “Biological material investigations” *UCSD Biomedical Engineering Society Lab Expo*, San Diego, CA, USA, January 2015.
102. S. E. Naleway, W. Yang, M. M. Porter, M. A. Meyers, J. McKittrick, “Bioinspiration from the distinctive armored carapace of the boxfish” *Korea University-UC San Diego Materials Science Workshop*, San Diego, CA, USA, December 2014.
103. S. E. Naleway, W. Yang, M. M. Porter, M. A. Meyers, J. McKittrick, “Bioinspiration from the distinctive armored carapace of the boxfish” *UCSD Engineering Expo 2014*, San Diego, CA, USA, April 2014.
104. Z. Evenson, S. Naleway, S. Wei, O. Gross, J. Kruzic, I. Gallino, W. Possart, M. Stommel, R. Busch, “Beta-relaxation and low-temperature aging in a Au-based bulk metallic glass: from elastic properties to atomic-scale structure” *SNI 2014*, Bonn, Germany, September 2014.
105. J. McKittrick, M. M. Porter, S. Naleway, M. B. Frank, “Biomimicry: What engineers can learn from nature” *Society of Hispanic Professional Engineers, Leadership Development Conference 2014*, La Jolla, CA, USA, April 2014. ***Invited***
106. M. B. Frank, M. M. Porter, S. E. Naleway, J. McKittrick, “Magnetic freeze casting with surface magnetized ceramic particles” *UCSD Engineering Expo 2014*, San Diego, CA, USA, April 2014.
107. J. McKittrick, M. M. Porter, S. Naleway, M. M. Meyers, “Nanoscale effects on the mechanical properties of biological materials” *3rd International Symposium on Nanoscale and Nanomaterials*, Ensenada, Mexico, March 2014.
108. J. J. Kruzic, S. E. Naleway, B. Gludovatz, R. O. Ritchie, “Unique characteristics of the fracture and fatigue behavior of bulk metallic glasses” *2014 TMS Annual Meeting*, San Diego, CA, USA, February 2014. ***Invited***
109. J. J. Kruzic, S. E. Naleway, B. Gludovatz, R. O. Ritchie, “Unique characteristics of the fracture and fatigue behavior of bulk metallic glasses” *Fall Meeting of the Materials Research Society*, Boston, MA, USA, December 2013. ***Invited***
110. J. J. Kruzic, S. E. Naleway, B. Gludovatz, R. O. Ritchie, “A fatigue and fracture resistant bulk metallic glass” *2013 TMS Annual Meeting*, Austin, TX, USA, March 2013.

INVITED UNIVERSITY SEMINARS

1. S. E. Naleway, “Uncovering biological blueprints with biological materials science and bioinspired design” *University of Nevada, Reno Seminar Series*, Reno, NV, USA, October 2022.
2. S. E. Naleway, “Uncovering biological blueprints with biological materials science and bioinspired design” *Oregon State University Chemistry Seminar Series*, Corvallis, OR, USA, February 2022.
3. S. E. Naleway “Blueprints from biology: Bioinspired design and biological materials science” *Oregon State University Materials Science Seminar Series*, Corvallis, OR, USA, October 2016.

OTHER INVITED LECTURES

1. S. E. Naleway, “Fabricated foams and fungi: Studies in bioinspired materials and biological materials science” *Gareth Thomas Materials Excellence Award Symposium and Award Ceremony*, La Jolla, CA, USA, November 2022.
2. S. E. Naleway, “Biological blueprints” *2019 ARCS Colloquium*, Salt Lake City, UT, USA, September 2019.
3. S. E. Naleway “Bioinspired freeze casting through extrinsic control” *Gareth Thomas Materials Excellence Award Symposium and Award Ceremony*, La Jolla, CA, USA, November 2018.
4. S. E. Naleway, “Blueprints from biology” *2018 Natural History Museum of Utah Lecture Series*, Salt Lake City, UT, USA, March 2018.
5. S. E. Naleway “Bio-inspired materials through freeze casting” *Gareth Thomas Materials Excellence Award Symposium and Award Ceremony*, Berkeley, CA, USA, November 2017.
6. S. E. Naleway, “Bioinspired designs from freeze casting” *ASM International technical meeting*, San Diego, CA, USA, April 2015.
7. S. E. Naleway, “Mars Urchin: Bioinspiration from the jaws of the sea urchin” *UCSD Grad Slam 2015*, San Diego, CA, USA, April 2015.
8. S. E. Naleway, “Biological materials, bioinspired design and photoluminescence” *Mechanical and Aerospace Engineering Prospective Graduate Student Open House*, University of California, San Diego, San Diego, CA, USA, March 2015.
9. S. E. Naleway, “Ceramic freeze casting and clathrate hydrates for bioinspired design” *Iovine and Benz joint Laboratory Meeting*, University of San Diego, San Diego, CA, USA, July 2014.

FUNDING

Total amount awarded: \$1,189,044; Naleway’s share: \$932,496

Current

1. S. E. Naleway (PI), “Biotemplating of plant tissues with tailored hydrophilicity for the next generation of petroleum filters” *American Chemical Society PRF 65985-ND10*, \$110,000 total, \$110,000 Naleway’s share.
2. S. E. Naleway (PI), J. Abbott (Co-PI), H. Fu (Co-PI), “Combining controlled magnetic fields and freeze casting for structured advanced ceramics and composites” *ARO W911NF-21-1-0062*, 12/18/20 - 12/17/23, \$454,158 total, \$376,950 Naleway’s share.
 - S. E. Naleway (PI) 2x AEOP supplement, 1/1/22 - 12/31/22 and 1/1/23 – 12/31/23, \$16,535 total, \$16,535 Naleway’s share.

Completed

3. B. Raeymaekers (PI), S. E. Naleway (Co-PI), “EAGER: Manufacturing nanocomposite materials using ultrasound directed self-assembly and additive fused deposition modeling” *NSF AM*, 08/15/20 - 07/31/21, \$100,000 total, \$31,120 Naleway’s share.
4. S. E. Naleway (PI), B. Raeymaekers (Co-PI), “Manufacturing of engineered materials with user-specified microstructures using freeze casting and ultrasound directed self-assembly” *NSF MME*, 07/01/17 - 06/30/20, \$351,601 total, \$278,641 Naleway’s share.
 - S. E. Naleway (PI) 2x REU supplement, 2/1/18 - 1/31/19 and 2/1/19 - 1/31/20, \$32,000 total, \$32,000 Naleway’s share.
5. K. Carlson (PI), S. E. Naleway (Co-PI), “Improving dental bone grafts with tunable alloplastic materials” *USTAR STIG*, 1/1/18 - 12/31/18, \$75,000 total, \$37,500 Naleway’s share.
6. S. E. Naleway (PI), B. Raeymaekers (Co-PI), “Nanoindenter for nano- and microscale characterization of material properties” *University of Utah RIF*, 01/01/17 - 12/31/17, \$49,750 total, \$49,750 Naleway’s share.

In review

1. S. E. Naleway (PI), “Low-cost, environmentally-friendly electronics from fungi” *Moore Inventors Award*, \$675,000 total.
2. S. E. Naleway (PI), P. Newell (Co-PI), D. T. M. Dentinger (Co-PI), J. Uehling (Co-PI), “Providing the scientific knowledge base of structure-property relationships of fungi” *W. M. Keck Foundation Award*, \$1,300,000 total.
3. S. E. Naleway (PI), “Mixed-energized field (MEF) freeze casting” *NSF AM*, \$539,565 total.
4. S. E. Naleway (PI), B. T. M. Dentinger (Co-PI), “Discovering the biomechanics of filamentous fungi and their hyphae” *NSF BMMB*, \$509,143 total.
5. S. E. Naleway (PI), S. Jeyapalina (Co-PI), “Structural, *in vitro*, and *in vivo* understanding of a novel osteogenic bone substitute for reconstructing craniofacial defects from extrinsically controlled freeze casting of fluorapatite” *NIH NIDCR R03*, \$298,700 total.

PATENT DISCLOSURES

1. K. Carlson, J. Colombo, S. E. Naleway, “Quick set cements for dental pulp capping and related methods of use” Pub. No.: US 2020/0289378 A1, Pub. Date: 9/17/20.

ACADEMIC AND RESEARCH MEDIA EXPOSURE

1. [“It’s big. It’s nasty. And its tendrils suck the life out of trees”](#) *DeseretNews.com*, December 9th, 2021.
2. [“Did beards evolve to protect men from punches? Here’s what U. of U. researchers discovered”](#) *DeseretNews.com*, September 10th, 2021.
3. [“U. of U. research on beards among 'winners' of 2021 Ig Nobel prizes: studies on flying rhinoceroses, cockroaches, gum also honored”](#) *KSL.com*, September 9th, 2021.
4. [“Creating advanced materials with magnetic manipulation and freeze casting”](#) *University of Utah Mechanical Engineering News and Events*, February 11th, 2021.
5. [“Materialism”](#) *Micro Podcast guest*, September 18th, 2020 (Note: I am featured in the episode titled “ μ : Bio-Inspired Materials”).
6. [“Late show with Stephen Colbert”](#) June 16th, 2020 (Note: “coverage” of my research begins at ~4:10 into the video)

7. "[Why Beards, Episode #777](#)" *The Skeptic's Guide to the Universe*, May 30th, 2020.
8. "[Natural History Museum of Utah Lecture Series](#)" *Natural History Museum of Utah*, March 29th 2018.
9. "[Profs. Steven Naleway and Bart Raeymaekers receive \\$352K NSF grant](#)" *University of Utah Mechanical Engineering News and Events*, March 30th 2017.
10. "[Naleway, Raeymaekers Receive RIF Award for New Nanoindenter](#)" *University of Utah Mechanical Engineering News and Events* December 15th 2017.
11. "[MRS Arthur Nowick Graduate Student Award](#)" *UC San Diego Materials Science News and Events*, March 30th 2016.
12. "[2014-2015 UC San Diego Bouchet Graduate Honor Society Members](#)" *UC San Diego Graduate Division*, March 2016.
13. "[Gareth Thomas Materials Excellence Award](#)" *UC San Diego Materials Science News and Events*, February 1st 2016.
14. "[Researchers Say These Fish Scales Could Be Prototype For Flexible New Body Armor](#)" *Forbes.com*, July 30, 2015.
15. "[A Boxfish is Bio-Inspiring New Materials for Robots and Flexible Electronics](#)" *Clapway.com*, July 30, 2015.
16. "[Researchers look to the boxfish for new body armor materials](#)" *Gizmag.com*, July 29, 2015.
17. "[The Boxfish: a fish that traded speed for armor](#)" *STEM Digest*, July 28, 2015.
18. "[Boxfish shell inspires new materials for body armor and electronics](#)" *UC San Diego Jacobs School of Engineering Blog*, July 28, 2015.
19. "[Meet the Engineers of Tomorrow: Michael Frank and Steven Naleway](#)" *UC San Diego Jacobs School of Engineering Blog*, April 14, 2015.
20. "[UCSD Grad SLAM Finals, Mars Urchin: Bioinspiration from the Jaws of the Sea Urchin](#)" *UC San Diego Grad SLAM Finals*, April, 2015.

ACADEMIC ADVISING AND MENTORSHIP

Current

Ph.D.

1. Anthony Yin (2018 - present)
2. Debora Lyn Porter (2019 - present)
3. Josh Fernquist (2020 - present)
4. Maddison Schmitz (2021 - present)

M.S. Thesis

1. Elise Hotz (2021 - present)

Graduated

Ph.D.

1. Isaac Nelson (2016 - 2019)

M.S. Thesis

1. Josh Alexander (2019 - 2021)
2. Max Mroz (2018 - 2020)
3. Paul Wadsworth (2018 - 2019)
4. Taylor Ogden (2017 - 2019)

M.S. Milestone

1. Josh Fernquist (2022)
2. Debora Lyn Porter (2021)
3. Tony J. Yin (2021)

STUDENT AND MENTEE AWARDS

1. Debora Lyn Porter (Ph.D. student) was awarded the 2022-2023 DEMS Graduate Student Researcher of the Year award by the University of Utah Department of Mechanical Engineering.
2. Josh Fernquist (Ph.D. student) was awarded second place in the Biological Materials Science Poster Session at the 2022 TMS Annual Meeting & Exhibition for his poster titled, “Improved Structural and Mechanical Performance of Iron Oxide Scaffolds Freeze Cast under Oscillating Magnetic Fields.”
3. Max Mroz’s (M.S. student) paper titled, “Biotemplating of a Highly Porous Cellulose–Silica Composite from *Apium graveolens* by a Low-Toxicity Sol–Gel Technique” was selected as a [JOM Editor’s Choice article for June 2021](#).
4. Tony J. Yin (Ph.D. student) was awarded second place in the Biological Materials Science Poster Session at the 2020 TMS Annual Meeting & Exhibition for his poster titled, “Microsphere calcium phosphate cements to improve injectability and 3D-printability of dental biomaterials”
5. Sierra Freitas and Lauren Kochaver (REU funded undergraduate researchers) were awarded the Best Presenter award at the 2019 ASME IMECE poster competition for their poster titled, “Porous helical and Bouligand scaffolds fabricated by low strength magnetic freeze casting”
6. Max Mroz (M.S. student) was awarded first place in the 2019 University of Utah ASM student poster competition for his poster titled, “Nanoscale porous bioinspired materials through ice and ultrasound templating”
7. Paul Wadsworth (M.S. student) was awarded first place in the Biological Materials Science Poster Session at the 2019 TMS Annual Meeting & Exhibition for his poster titled, “3D printing bioinspired composite materials with ultrasound directed self-assembly”
8. Jerry Howard (REU funded undergraduate researcher) was awarded third place in the Biological Materials Science Poster Session at the 2019 TMS Annual Meeting & Exhibition for his poster titled, “Calcium phosphate microspheres: A novel approach to calcium phosphate cements”
9. Tony Yin (Ph.D. student) was awarded a 2018-2019 ARCS Scholarship.
10. Taylor Ogden (M.S. student) was awarded first place in the Biological Materials Science Poster Session at the 2018 TMS Annual Meeting & Exhibition for his poster titled, “Freeze casting of bioinspired porous ring structures through ultrasound directed self-assembly”

TEACHING EXPERIENCE

University of Utah (semester system)

- **ME EN 1000 “Intro Design for Engineering Systems”** Undergraduate (Fall 2016-2022, Spring 2021, Fall 2023)
- **ME EN 5035/6035 “Design of Experiments”** Undergraduate/Graduate (Spring 2018)
- **ME EN 7960 “Bio-Inspired Design”** Graduate (Spring 2020, Spring 2024)

Oregon State University (quarter system)

- MATS 321 “Introduction to Materials Science” Undergraduate (Spring 2023)
- MATS 322 “Mechanical Properties of Materials” Undergraduate (Winter 2023)
- MATS 581 “Thermodynamics of Solids” Graduate (Fall 2022)

ACADEMIC AND UNIVERSITY SERVICE

Journal Editorial Activities:

- [Journal of Materials Science](#)
 - Editor: 2023 - present
- [Journal of Materials \(JOM\)](#)
 - Biological Materials Science Symposium JOM Advisor and Editor: 2022 - 2024
 - Guest editor for a special edition titled “[Biological translation: Biological materials science and bioinspired design](#)”: 2022 - 2023
 - Guest co-editor for a two-part special edition titled “[Advanced manufacturing for biomaterials and biological materials](#)”: 2019 - 2020
- [Journal of Materials Research and Technology](#)
 - Managing guest editor for a special issue titled “[Advanced Functional and Biological Materials: A Memorial Issue Dedicated to Professor Joanna McKittrick](#)”: 2020 - 2021

Academic Community Service:

- [The Minerals, Metals, and Materials Society](#) (TMS), Biological Materials Science Symposium
 - Journal of Materials (JOM) Committee Advisor, 2022 - 2024
 - Committee Secretary: 2021 - 2022
 - Symposium organizing committee chair: 2018, 2020
 - Symposium organizer: 2017 - 2023
 - Student poster competition judge: 2017 - 2023
 - Session chair: 2017 - 2023
- [The Minerals, Metals, and Materials Society](#) (TMS), Mechanics and Physiological Adaptation of Hard and Soft Biomaterials and Biological Tissues Symposium
 - Symposium organizing committee: 2022 - 2023
- [International Conference and Expo on Advanced Ceramics and Composites \(ICACC\)](#), Bioinspired Processing of Advanced Materials Symposium
 - Symposium organizer: 2020 - 2022
 - Session chair: 2022
- [8th International Conference on Mechanics of Biomaterials and Tissues \(ICMOBT-8\)](#)
 - Scientific Committee member: 2019
 - Session chair: 2019
- [Materials Science & Technology](#) (MS&T), Next Generation Biomaterials Symposium
 - Session chair: 2017
- [ACerS Educational and Professional Development Council \(EPDC\)](#)
 - Co-Chair: 2022-2024
- [ACerS Mentor Program](#)
 - Faculty Mentor: 2022-2023
 - Student Mentor: 2023

Proposal Reviewing Activities:

- NSF Reviewer
 - SBIR Phase I (panelist x3, ad-hoc x1)
- ARO Reviewer
 - Synthesis and Processing Program (ad-hoc x1)

University of Utah Service

1. [ACCESS](#) Student Selection Committee Member (2018 - 2022)
2. Fellowships/Scholarships & Honors Committee Member (2016 - 2022)
3. Faculty Success Committee Member (2019 - 2022)
4. Biomedical Applications of Mechanical Engineering Faculty Search Committee; committee member for the 2018-2019 faculty search. (2018 - 2019)
5. Utah Nanofab Faculty Executive Committee Member (2017)

REVIEW ACTIVITIES

Reviewer

- *Accounts of Materials Research*
- *ACS Biomaterials Science and Engineering*
- *ACS Applied Materials and Interfaces*
- *ACS Nano*
- *Acta Biomaterialia*
- *Acta Materialia*
- *Additive Manufacturing*
- *Advanced Engineering Materials*
- *Advanced Functional Materials*
- *Advanced Materials*
- *Advanced Science*
- *Applied Thermal Engineering*
- *Bioinspired, Biomimetic and Nanobiomaterials*
- *Ceramics*
- *Communications Materials*
- *Composite Structures*
- *Engineering Fracture Mechanics*
- *International Journal of Earth Science and Geophysics*
- *Journal of the European Ceramic Society*
- *Journal of Manufacturing Science and Engineering*
- *Journal of Materials (JOM)*
- *Journal of Materials Research & Technology*
- *Journal of the American Ceramic Society*
- *Journal of the Mechanical Behavior of Biomedical Materials*
- *Journal of the Royal Society Interface*
- *Maderas-Cienc Tecnol*
- *Materials*

- *Materials & Design*
- *Materials Letters*
- *Mathematical and Computational Applications*
- *Materialia*
- *Matter*
- *Mechanics of Soft Materials*
- *Metallurgical and Materials Transactions A*
- *MRS Advances*
- *Nature Communications*
- *PLOS One*
- *Polymer Testing*
- *Scripta Materialia*
- *Science*
- *Scientific Reports*
- *Surface and Coatings Technology*

PROFESSIONAL AFFILIATIONS

- Member of ASM International
- Member of The Minerals, Metals, and Materials Society (TMS)
- TMS Biomaterials Committee member
- American Ceramic Society