

Elizabeth S. Sooby, PhD

Assistant Professor

I. CONTACT INFORMATION

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II. EDUCATIONAL BACKGROUND

Doctor of Philosophy	Physics	Texas A&M University	2014
Master of Science	Physics	Texas A&M University	2011
Bachelor of Science	Physics	Millsaps College	2008

III. PROFESSIONAL EMPLOYMENT HISTORY

Co-owner	Nuclear Materials Consulting, LLC		2021-Present
Assistant Professor	Physics and Astronomy	University of Texas at San Antonio	2017- Present
Assistant Professor	Mechanical Engineering	University of Texas at San Antonio	2019- Present
Staff Scientist II	Materials Science and Tech.	Los Alamos National Laboratory	2017
Postdoctoral Fellow	Materials Science and Tech.	Los Alamos National Laboratory	2014-2017
Grad. Research Asst.	Materials Science and Tech.	Los Alamos National Laboratory	2013-2014
Grad. Research Asst.	Department of Physics	Texas A&M University	2009-2014
Visiting Researcher	University Pierre and Marie Curie, Paris 6, Paris, France		2012
Visiting Researcher	Center for Advanced Energy Studies, Idaho Falls, ID		2011
Grad. Research Asst.	Materials Physics Applications	Los Alamos National Laboratory	2010
Undergrad. Intern	Propulsion Research Lab.	NASA Marshall Space Flight Center	2009
Undergrad. Intern	Electrical Engineering Support	NASA Marshall Space Flight Center	2008

IV. AWARDS & HONORS

UTSA Presidents Distinguished Award for Research Achievement	2021
Seaborg Postdoctoral Fellowship, Los Alamos National Lab	2015- 2016
Seaborg Graduate Fellowship, Los Alamos National Lab	2013- 2014
Ethel Ashworth-Tsutsui Memorial Award for Excellence in Research, Texas A&M University	2012
NSF IGERT Fellowship	2009-2011
Magna cum Laude: Millsaps College	2008

V. RESEARCH/SCHOLARLY/CREATIVE ACTIVITES

A. Publications

Book Chapters (Refereed)

1. **Elizabeth Sooby Wood**[†], Joshua T. White, Brian Jaques, Douglas Burkes, Paul Demkowicz, "10 - Advances in fuel fabrication", Editor(s): Markus H.A. Piro, In Woodhead Publishing Series in Energy, *Advances in Nuclear Fuel Chemistry*, Woodhead Publishing, 2020, Pages 371-418, ISBN 9780081025710, <https://doi.org/10.1016/B978-0-08-102571-0.00011-2>. Contribution: 25%; Journal Impact Factor: N/A; Citations: 2
2. **Elizabeth Sooby Wood**[†], Jordan Vandegrift, Brian Jaques, "4.15 - Steam Oxidation in Accident Conditions", Editor(s): Rudy J.M. Konings, Roger E. Stoller, *Comprehensive Nuclear Materials* (Second Edition), Elsevier, 2020, Pages 452-473, ISBN 9780081028667, <https://doi.org/10.1016/B978-0-12-803581-8.11623-6>. Contribution: 75; Journal Impact Factor: N/A; Citations: 2

Journal Articles (Refereed)

3. Cole Moczygemba*, Jonathan George, Eduardo Montoya, Eunja Kim, Geronimo Robles*, and **Elizabeth S Sooby**[†], "Structure Characterization and Steam Oxidation Performance of U₃Si₂ with Zr Alloying Additions,"

* Indicates Advised Student/Fellow Authorship

† Indicates Corresponding Author

- Journal of Nuclear Materials*, Under Revision, January 2022, Contribution: 30%; Journal Impact Factor: 2.936; Citations: 0
4. **Elizabeth S. Sooby**[†], Brian Brigham^{*}, Geronimo Robles^{*}, Joshua White, Scarlett Widgeon Paisner, Erofil Kardoulaki, and Brandon Williams^{*}, “Steam Oxidation of Uranium Mononitride in Pure and Reducing Steam Atmospheres to 1200 °C,” *Journal of Nuclear Materials*, In Press, December 2021, Contribution: 45%; Journal Impact Factor: 2.936; Citations: 0.
 5. Jennifer Watkins, Adrian R. Wagner, Adrian Gonzales^{*}, Brian J. Jaques, **Elizabeth S. Sooby**[†], “Challenges and Opportunities to Alloyed and Composite Fuel Architectures to Mitigate High Uranium Density Fuel Oxidation: Uranium Diboride and Uranium Carbide”, “*Journal of Nuclear Materials*, In Press, January 2022, Contribution: 25%; Journal Impact Factor: 2.936; Citations: 0
 6. Brian A. Brigham^{*}, Katherine I. Montoya^{*}, Tyler J. Gerczak, **Elizabeth S. Sooby**, “Determination of oxidation rates and volatile oxidation products for HTGR graphite matrix material exposed to steam and oxygen atmospheres,” *Journal of Nuclear Materials*, 557, 153256, December 2021, <https://doi.org/10.1016/j.jnucmat.2021.153256>. Contribution: 18%; Journal Impact Factor: 2.936; Citations: 0
 7. K. Kane, P. Stack, P. Mouche, B. Brigham^{*}, **E. Sooby**, B. Pint, X. Hu, “Air oxidation of yttrium hydride as a high temperature moderator for thermal neutron spectrum fission reactors,” *Journal of Nuclear Materials*, 556, 153166, December 2021, <https://doi.org/10.1016/j.jnucmat.2021.153166>. Contribution: 15%; Journal Impact Factor: 2.936; Citations: 0
 8. Adrian Gonzales^{*}, Jennifer K. Watkins, Adrian R. Wagner, Brian J. Jaques, **Elizabeth S. Sooby**[†], “Challenges and Opportunities to Alloyed and Composite Fuel Architectures to Mitigate High Uranium Density Fuel Oxidation: Part 2 Uranium Silicide,” *Journal of Nuclear Materials*, 553, September 2021, <https://doi.org/10.1016/j.jnucmat.2021.153026>. Contribution: 22%; Journal Impact Factor: 2.936; Citations: 2
 9. Jennifer K. Watkins, Adrian Gonzales^{*}, Adrian R. Wagner, **Elizabeth S. Sooby**, Brian J. Jaques, “Challenges and Opportunities to Alloyed and Composite Fuel Architectures to Mitigate High Uranium Density Fuel Oxidation: Part 1 Uranium Mononitride,” *Journal of Nuclear Materials*, 553, September, 2021. <https://doi.org/10.1016/j.jnucmat.2021.153048> Contribution: 18%; Journal Impact Factor: 2.936; Citations: 2
 10. Katherine I. Montoya^{*}, Brian A. Brigham^{*}, Cole Moczygemba^{*}, Tyler Gerczak, Anne Campbell, and Elizabeth S. Sooby, “Determination of preferential binder oxidation in HTGR matrix material subjected to high temperature steam,” *Journal of Nuclear Materials*, 544, February 2021. <https://doi.org/10.1016/j.jnucmat.2020.152674> Contribution: 15%; Journal Impact Factor: 2.936; Citations: 1
 11. K. Kane, K. Montoya^{*}, D. Scahappel, P. Mouche, P. Stack, E. Sooby, K. Terrani, “Oxidation of 3D-printed SiC in air and steam environments,” *Journal of the American Ceramic Society*, 104, (5), 2225–2237, 2021 <https://doi.org/10.1111/jace.17632> Contribution: 18%; Journal Impact Factor: 3.502; Citations: 2
 12. Tashiema Wilson, Sven Vogel, Denise Lopes, Vancho Kocovski, Joshua White, Elizabeth Sooby Wood, Theodore Besmann, “Phase Stability of U₅Si₄, USi, and U₂Si₃ in the Uranium-Silicon System,” *Journal of Nuclear Materials*, 540, November 2020, <https://doi.org/10.1016/j.jnucmat.2020.152353>. Contribution: 10%; Journal Impact Factor: 2.936; Citations: 1
 13. Marianne P. Wilkerson, Sarah C. Hernandez, Tyler W. Mullen, Andrew T. Nelson, Alison L. Pugmire, Brian L. Scott, **Elizabeth S Sooby**, Alison L. Tamasi, Gregory L. Wagner, Justin R. Walensky, “Hydration of UO₃ materials following storage under controlled conditions of temperature and relative humidity,” *Journal of Chemical Society, Dalton Transactions*, 49, 10452–10462, 2020. <https://doi.org/10.1039/D0DT01852J> Contribution: 8%; Journal Impact Factor: 4.174; Citations: 11
 14. **Sooby Wood, E.**[†], Moczygemba, C. ^{*}, Robles, G. ^{*}, Acosta, Z. ^{*}, Brigham, B.A. ^{*}, Grote, C.J., Metzger, K, and Cai, L., “High Temperature Steam Oxidation Dynamics of U₃Si₂ with Alloying Additions: Al, Cr, and Y,” *Journal of Nuclear Materials*, 533, May 2020, <https://doi.org/10.1016/j.jnucmat.2020.152072>. Contribution: 45%; Journal Impact Factor: 2.936; Citations: 10.
 15. Tashiema Ulrich, Sven C Vogel, Joshua T White, David A Andersson, **Elizabeth Sooby Wood**, PhD; Theodore M. Besmann, “High Temperature Neutron Diffraction Investigation of U₃Si₂,” *Materialia*, 9, March 2020. <https://doi.org/10.1016/j.mtla.2019.100580>; Contribution: 12%; Journal Impact Factor: 7.293;

^{*} Indicates Advised Student/Fellow Authorship

Citations: 3

16. Tyler D. Morrison, **Elizabeth S. Wood**[†], Philippe F. Weck, Eunja Kim, Sung Oh Woo, Andrew T. Nelson, and Donald G. Naugle, “A comprehensive assessment of the low-temperature thermal properties and thermodynamic functions of CeO₂”, *The Journal of Chemical Physics*, 151, July 2019, pages 044202:1-11. <https://doi.org/10.1063/1.5110178>. Percent Contribution: 20%; Journal Impact Factor: 2.997; Citations: 1
17. D. A. Lopes, T. L. Wilson, V. Kocovski, E. Moore, T. M. Besmann, **E. Sooby Wood**, J. T. White, A. T. Nelson, S.C. Middleburgh, and A. Claisse, “Experimental and Computational Assessment of U-Si-N Ternary Phases”, *Journal of Nuclear Materials*, 516, April 2019, pages 194-201. <https://doi.org/10.1016/j.jnucmat.2019.01.008>. Contribution: 8%; Journal Impact Factor: 2.936; Citations: 2
18. Wilson, T. L., Moore, E. E., Lopes, D. A., Kocovski, V., **Wood, E. S.**, White, J. T., Nelson, A. T., McMurray, J. W., Middleburgh, S. C., Xu, P., and Besmann, T. M. “Uranium nitride-silicide advanced nuclear fuel: higher efficiency and greater safety”, *Advances in Applied Ceramics*, 117, (sup1), November 2018, pages 76-81. <https://doi.org/10.1080/17436753.2018.1521607>. Contribution: 8%; Journal Impact Factor: 1.429; Citations: 13
19. Li, N., Parker, S. S., **Sooby Wood, E.**, and Nelson, A. T. “Oxide Morphology of a FeCrAl Alloy, Kanthal APMT, Following Extended Aging in Air at 300-600°C”, *Metallurgical and Materials Transactions A*, 49(9), July 2018, pages 2940–2950. <https://doi.org/10.1007/s11661-018-4649-5>. Contribution: 20%; Journal Impact Factor: 1.985; Citations: 9
20. **Sooby Wood, E.**[†], White, J., Grote, C., and Nelson, A.T. “U₃Si₂ in H₂O: Part I Flowing Steam and the effect of H₂”. *Journal of Nuclear Materials*, 501, April 2018, 404-412. <https://doi.org/10.1016/j.jnucmat.2018.01.002>. Contribution: 50%; Journal Impact Factor: 2.936; Citations: 41
21. Nelson, A. T., Migdisov, A., **Sooby Wood, E.**, and Grote, C.J. “U₃Si₂ Behavior in H₂O Environments: Part II, Pressurized Water with Controlled Redox Chemistry”. *Journal of Nuclear Materials*, March 2018, 500, pages 81-91. <https://doi.org/10.1016/j.jnucmat.2017.12.026>. Contribution: 25%; Journal Impact Factor: 2.936; Citations: 47
22. **Sooby Wood, E.**[†], White, J.T., & Nelson, A.T. “The effect of aluminum additions on the oxidation resistance of U₃Si₂”. *Journal of Nuclear Materials*, June 2017, 489, pages 84-90. <http://dx.doi.org/10.1016/j.jnucmat.2017.02.045>. Contribution: 40%; Journal Impact Factor: 2.936; Citations: 32
23. **Sooby Wood, E.**[†], White, J.T., & Nelson, A.T. “Oxidation behavior of U-Si compounds in air from 25 to 1000 C”. *Journal of Nuclear Materials*, February 2017, 484, pages 245-257. <http://dx.doi.org/10.1016/j.jnucmat.2016.12.016>. Contribution: 35%; Journal Impact Factor: 2.936; Citations: 49
24. **Sooby Wood, E.**[†], Terrani, K.A., and Nelson, A.T. “Sensitivity of measured steam oxidation kinetics to atmospheric control and impurities,” *Journal of Nuclear Materials*, August 2016, 477, pages 228-233. <http://dx.doi.org/10.1016/j.jnucmat.2016.05.023>. Contribution: 35%; Journal Impact Factor: 2.936; Citations: 7
25. Tang, M., Nelson, A., **Sooby Wood, E.**, Maloy, S., & Jiang, Y.-B., “Grazing incidence X-ray diffraction and transmission electron microscopy studies on the oxide formation of molybdenum in a water vapor environment,” *Scripta Materialia*, 120, 2016, pages 49-53. <https://doi.org/10.1016/j.scriptamat.2016.04.010>. Contribution: 20%; Journal Impact Factor: 3.747; Citations: 4
26. **Sooby Wood, E.**[†], Parker, S. S., Nelson, A. T., and Maloy, S. A. MoSi₂ Oxidation in 670-1498 K Water Vapor. *Journal of the American Ceramic Society*, March 2016, 99(4), pages 1412-1419. <http://dx.doi.org/10.1111/jace.14120>. Contribution: 40%; Journal Impact Factor: 3.094; Citations: 14
27. **Sooby, E.**[†], Nelson, A.T., White, J.T., and McIntyre, P.M. “Measurements of the liquidus surface and solidus transitions of the NaCl–UCl₃ and NaCl–UCl₃–CeCl₃ phase diagrams,” *Journal of Nuclear Materials*, November 2015, 466, pages 280-285. <http://dx.doi.org/10.1016/j.jnucmat.2015.07.050>. Contribution: 50%; Journal Impact Factor: 2.936; Citations: 9
28. Nelson, A.T., **Sooby, E.**, Kim, Y.-J., Cheng, B., and Maloy, S.A. “High temperature oxidation of

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molybdenum in water vapor environments,” *Journal of Nuclear Materials*, May 2014, 448(1-3), pages 441-447. <http://dx.doi.org/10.1016/j.jnucmat.2013.10.043>. Contribution: 30%; Journal Impact Factor: 2.936; Citations: 64

29. **Sooby, E.**[†], Baty, A., Beneš, O., McIntyre, P., Pogue, N., Salanne, M., and Sattarov, A, “Candidate molten salt investigation for an accelerator driven subcritical core,” *Journal of Nuclear Materials* (Impact Factor: 2.547), September 2013, 440 (1-3), pages 298-303. <http://dx.doi.org/10.1016/j.jnucmat.2013.04.004>. Contribution: 30%; Journal Impact Factor: 2.936; Citations: 18

Conference Proceedings, Transactions, and Extended Abstracts (Refereed)

30. Elizabeth S. Sooby, Miltiadis Alamaniotis, Alexander Heifetz, “Gaussian Process Ensemble for Corrosion Modeling and Prediction in Molten Salt Reactors”, *Proceedings of the 12th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2021)*, pages 239-250, June 2021. Contribution: 40%; Journal Impact Factor: N/A; Citations: 0
31. Elizabeth S. Sooby, Brian A. Brigham, Geronimo Robles, Zachary Acosta, and Joshua T. White “Steam Oxidation Performance of Uranium Mononitride during Thermal Ramp and Isothermal Conditions,” *Transactions of the American Nuclear Society*, 124 (1), 246-249, June 2021. Contribution: 40%; Journal Impact Factor: N/A; Citations: 0
32. Katherine I. Montoya, Brian A. Brigham, Tyler J. Gerczak, Elizabeth S. Sooby, “Oxidation of the SiC Layer of Tristructural-Isotropic Particles in High-Temperature Mixed Gas Atmospheres,” *Transactions of the American Nuclear Society*, 124 (1), pages 287-290, June 2021. Contribution: 22%; Journal Impact Factor: N/A; Citations: 0
33. Thomas Kirtley*, **Elizabeth S. Sooby**, “Fabrication and Microstructural Analysis of U₆Fe,” *Transactions of the American Nuclear Society*, 123 (1) pages 624-626, November 2020. Contribution: 50%; Journal Impact Factor: N/A; Citations: 0
34. Geronimo Robles*, Joshua T. White, **Elizabeth S. Sooby**, “Compositional Impact and Microstructure Analysis of Niobium Additions to U₃Si₂,” *Transactions of the American Nuclear Society*, 123, (1), pages 614-617, November 2020. Contribution: 35%; Journal Impact Factor: N/A; Citations: 0
35. Adrian Gonzales*, **Elizabeth Sooby Wood**, and Kent Coulter, “An Alternative Synthesis Route to U₃Si₂,” *Transactions of the American Nuclear Society*, Vol. 122, (1), pages 196-198, June 2020. Contribution: 40%; Journal Impact Factor: N/A; Citations: 0
36. Cole Moczygemba*, Michael Geyer, Amanda Fernandez, and **Elizabeth Sooby Wood**, “Using machine learning to predict the oxidation of graphite,” *Transactions of the American Nuclear Society*, Vol. 122, (1), pages 342-345, June 2020. Contribution: 40%; Journal Impact Factor: N/A; Citations: 0
37. Brian A. Brigham*, Katherine I. Montoya*, Tyler J. Gerczak, and **Elizabeth Sooby Wood**, Analysis of Graphite Matrix Kinetics and Burn-off Products under Off-Normal High-Temperature Gas-Cooled Reactors Conditions, *Transactions of the American Nuclear Society*, Vol. 122, (1), pages 349-352, June 2020. Contribution: 20%; Journal Impact Factor: N/A; Citations: 0
38. Katherine Montoya*, Brian A. Brigham*, Tyler J. Gerczak, and **Elizabeth Sooby Wood**, Microstructural Analysis of the SiC Layer of Tristructural-Isotropic Particles in High-Temperature Steam Atmospheres, *Transactions of the American Nuclear Society*, Vol. 122, (1), pages 339-341, June 2020. Contribution: 30%; Journal Impact Factor: N/A; Citations: 0
39. T.L. Wilson, S.C. Vogel, J.T. White, **E. Sooby Wood**, T.M. Besmann, “Crystal Structure Characterization of Uranium-Silicides Accident Tolerant Fuel by High Temperature Neutron Diffraction,” *Advances in X-ray Analysis*, Volume 63, proceedings of the 68th Annual Conference on Applications of X-ray Analysis, February 2020. Contribution: 10%; Journal Impact Factor: N/A; Citations: 0
40. Montoya, K. I. *, Brigham, B. A. *, Gerczak, T. J., & **Sooby Wood, E.** “Analysis of Matrix Graphite Degradation Under Varied Oxidizing Atmospheres”, *Transactions of the American Nuclear Society*, 121, 1, pages 703-704, November 2019. Contribution: 20%; Journal Impact Factor: N/A; Citations: 0
41. **Sooby Wood, E.**[†], Robles, G*, Moczygemba, C. *, Cai, L, Xu, P, and Lahoda, E, “Fabrication and Phase Composition of Alloyed Uranium Silicide Fuels”, Global 2019 Proceedings, Seattle, WA, September 22-27, 2019, pages 1070-1075. <http://globaltopfuel.ans.org/proceedings/data/g%20pdfs/1194-30055.pdf>.

Contribution: 55%; Journal Impact Factor: N/A; Citations: 0

42. Vogel, S., Wilson, T, **Sooby Wood, E**, White, J.T., and Besmann, T.M., “Temperature-dependent Crystal Structure of U_3Si_2 by High Temperature Neutron Diffraction”, Global 2019 Proceedings, Seattle, WA, September 22-27, 2019, pages 1062-1069. <http://globaltopfuel.ans.org/proceedings/data/g%20pdfs/1193-30228.pdf>. Contribution: 15%; Journal Impact Factor: N/A; Citations: 0
43. **Sooby Wood, E.**[†], Robles, G. ^{*}, White, J., Grote, C., and Nelson, A. “Microstructural degradation of U_3Si_2 and fission product silicides exposed to H_2O containing atmospheres,” *Transactions of the American Nuclear Society*, June 2018, 118, 1401-1403. Contribution: 55%; Journal Impact Factor: N/A; Citations: 0
44. Wilson, T., Adorno, D., Kocevski, V., Moore, E. E., White, J. T., **Sooby Wood, E.**, Nelson, A. T., Xu, P., Middleburgh, S. C., McMurray, J., & Besmann, T., “Uranium silicide and uranium silicide-nitride fuels: Assessing phase behavior for fabrication and in-reactor behavior”, *Transactions of the American Nuclear Society*, June 2018, 118.
45. **Sooby Wood, E.**[†], White, J. T., Byler, D. D., and Nelson, A. T., “The synthesis and air oxidation behavior of U-Si-Al and U-Si-B compositions,” *The American Nuclear Society, TOP FUEL 2016 Proceedings*, July 2017. Contribution: 40%; Journal Impact Factor: N/A; Citations: 0
46. J.T. White, E. Sooby Wood, JT Dunwoody, and AT Nelson, “State of knowledge and challenges of U-Si compounds for use in light water reactor accident tolerant fuel designs”, *The American Nuclear Society, TOP FUEL 2016 Proceedings*, July 2017. Contribution: 20%; Journal Impact Factor: N/A; Citations: 3)
47. McIntyre, P., Assadi, S., Badgley, K., Baker, W., Comeaux, J., Gerity, J., Kellams, J., McInturff, A., Pogue, N., Phongikaroon, S., Sattarov, A., Simpson, M., **Sooby, E.**, and Tsvetkov, P. “Accelerator-Driven Subcritical Fission In Molten Salt Core: Closing The Nuclear Fuel Cycle For Green Nuclear Energy,” *AIP Conference Proceedings*, April 2013, 1525, pages. 636-642. <https://doi.org/10.1063/1.4802405>. Contribution: 8%; Journal Impact Factor: N/A; Citations: 10
48. **Sooby, E.**[†], Adams, M., Baty, A., Gerity, J., McIntyre, P., Melconian, K., Phongikaroon, S., Pogue, N., Sattarov, A., Simpson, M., Tripathy, P., and Tsevkvov, P., “Molten Salt Considerations For Accelerator-Driven Subcritical Fission To Close The Nuclear Fuel Cycle,” *AIP Conference Proceedings*, April 2013, 1525, pages 230-235. <https://doi.org/10.1063/1.4802325>. Contribution: 12%; Journal Impact Factor: N/A; Citations: 0
49. Sattarov, A., Assadi, S., Badgley, K., Baty, A., Comeaux, J., Gerity, J., Kellams, J., McIntyre, P., Pogue, N., **Sooby, E.**, Tsvetkov, P., Rosaire, G., and Mann, T., “Neutronics of accelerator-driven subcritical fission for burning transuranics in used nuclear fuel,” *AIP Conference Proceedings*, April 2013, 1525(1), pages 245-250. <http://dx.doi.org/10.1063/1.4802328>. Contribution: 8%; Journal Impact Factor: N/A; Citations: 0
50. Baca, F. J., Holesinger, T. G., Coulter, J. Y., Miao, H., Huang, Y., Parrell, J., Campbell, S., Searcy, J., **Sooby, E.**, Kennison, J., DePaula, R., Apodaca, I., and Marken, K., “EFFECT OF PRE-ANNEALING IN THERMAL PROCESSING OF Bi-2212 ROUND WIRES,” *AIP Conference Proceedings*, June 2012, 1435, pages 340-345. <https://doi.org/10.1063/1.4712114>. Contribution: 10%; Journal Impact Factor: N/A; Citations: 6
51. Damborsky, K., Lu, F., McInturff, A., McIntyre, P., Pogue, N., and **Sooby, E.** “FABRICATION AND CHARACTERIZATION OF GREEN-STATE BI-2212 RIBBONS,”. *AIP Conference Proceedings*, June 2012, 1435, pages 325-331. <https://doi.org/10.1063/1.4712112>. Contribution: 5%; Journal Impact Factor: N/A; Citations: 1
52. Lu, F., Damborsky, K., McIntyre, P., McInturff, A., Pogue, N., Smit, K., & **Sooby, E.** (2012). STUDIES OF POROSITY, CONNECTIVITY, AND PARASITIC PHASES IN TEXTURED BI-2212/AG AFTER NON-MELT HEAT TREATMENTS. *AIP Conference Proceedings*, June 2012, 1435, pages 332-339. <https://doi.org/10.1063/1.4712113>. Contribution: 5%; Journal Impact Factor: N/A; Citations: 2
53. K. A. Polzin, **E. S. Sooby**, A. C. Kimberlin, Y. Raitses, E. Merino, and N. J. Fisch, “Performance of a permanent-magnet cylindrical Hall-effect thruster,” *Proceedings of the 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, Denver, CO, August 2009 ,AIAA paper, 2009-4812. <https://doi.org/10.2514/6.2009-4812>. Contribution: 25%; Journal Impact Factor: N/A; Citations: 12

B. Department of Energy Programmatic Reports (Not Peer-Reviewed/Refereed)

1. Li, N., Parker, S. S., & Sooby Wood, E., “Oxide Morphology of a FeCrAl Alloy, Kanthal APMT, following Extended Aging at 300-600C,” 2017, Office of Scientific and Technical Information (OSTI). <http://dx.doi.org/10.2172/1392894>, Contribution: 25%; Journal Impact Factor: N/A; Citations: N/A
2. Grote, C., White, J. T., & Sooby Wood, E., “Property-structure relationships for U-Si- X fuel forms,” 2017, NTRD-M3FT-17LA0202010311. Contribution: 25%; Journal Impact Factor: N/A; Citations: N/A
3. Sooby Wood, E., “Experimental assessment of fuel-clad interactions,” 2017, NTRD-M3FT-17LA0202010312, doi:10.2172/1367820. Contribution: 100%; Journal Impact Factor: N/A; Citations: N/A
4. E. Sooby Wood, LA-UR-17-22658, “Thermochemical stability of high density fuels under LOCA-relevant conditions,” NTRD-M3FT-17LA020201033, March 2017. Contribution: 100%; Journal Impact Factor: N/A; Citations: N/A
5. E. Sooby Wood and Christopher Grote, LA-UR-16-29499, “Progress in Development of U-Si-X Fuel forms,” “FCR&D-FUEL-2017-M3FT-17LA0202010310, December 2016. Contribution: 80%; Journal Impact Factor: N/A; Citations: N/A
6. E. Sooby Wood and Stephen S. Parker, LA-UR-16-27309, “Oxidation of Fe-Cr-Al Alloys following Extended Aging,” FCR&D-FUEL-2016-M3FT-16LA020202052, September 2016. Contribution: 80%; Journal Impact Factor: N/A; Citations: N/A
7. E. Sooby Wood, D. A. Fredenburg, A.T. Nelson, and J.E. Koster, (U) “Materials Characterization at LANL: A Bottom-Up Approach”, Science of Signatures Capability Review, May 16 – 18, 2016. Contribution: 50%; Journal Impact Factor: N/A; Citations: N/A
8. E. Sooby Wood and J.T. White, LA-UR-15-28862, “Augmentations in Oxidation Resistance Attainable in the U-Si System,” DOE Fuel Cycle Research and Development- FUEL-2015- M3FT-15LA0202152, December 2015. Contribution: 70%; Journal Impact Factor: N/A; Citations: N/A
9. E. Sooby Wood, LA-UR-15-26776, “Exploration of MoSi₂ Oxidation in High Temperature Steam,” DOE Fuel Cycle R&D- FUEL-2015- M3FT-15LA0202152, September 2015. 100%; Journal Impact Factor: N/A; Citations: N/A
10. E. Sooby and A.T. Nelson, LA-UR-15-23181, “Fuel-cladding interactions of advanced composites under steady-state and transient conditions,” DOE Fuel Cycle R&D- M3FT-15LA02021211, April 2015. 70%; Journal Impact Factor: N/A; Citations: N/A
11. E. Sooby, LA-UR-15-22154, “Complete Report on Benchmark Studies of Oxidation in Steam and Comparison with ORNL,” DOE Fuel Cycle R&D- FUEL-2015-000310, March 2015. 100%; Journal Impact Factor: N/A; Citations: N/A
12. E. Sooby, T.J. Winter, and A.T. Nelson, LA-UR-14-2609, “Assessment of Pellet-Cladding Interaction in Accident-Tolerant Fuels,” DOE Fuel Cycle R&D- M2FT-14LA0202121, August 2014. 50%; Journal Impact Factor: N/A; Citations: N/A

VI. SCHOLARLY PRESENTATIONS**A. Invited**

1. Sooby, E.S., **invited-virtual**, “Atmosphere Controlled Thermogravimetric Analysis as a tool to Screen, Test and Qualify Advanced Fuels under Extreme Conditions,” 2021 TMS Annual Meeting & Exhibition, (March 15-18, 2021).
2. Sooby, E.S., **invited-virtual**, “Material Fabrication and Accident Response Testing to Advance Materials Discovery and Qualification for next Generation Nuclear,” the American Vacuum Society, Prairie Chapter, (February 24, 2021)
3. Sooby, E.S., **invited-virtual**, “Thermal Analysis and Failure Characterization of Advanced Nuclear Fuel Materials,” Graduate Seminar, Department of Chemistry, University of California-Irvine, (February 23, 2021).
4. Sooby, E.S., **invited-virtual**, “Thermal Analysis and Physical Chemistry Enabling Nuclear Fuel Development,” Seminar, Department of Chemical Engineering, University of Texas at San Antonio, (November 30, 2020).
5. Sooby, E.S., **invited-virtual**, “Advanced Nuclear Fuel Testing and Development to Study, Characterize and

Mitigate Oxidation during Off-normal Events”, Graduate Student Seminar, Department of Mechanical Engineering, Brigham Young University, (October 13, 2020).

6. Wood, E. S., **invited**, "Advanced Reactor Fuel Fabrication and Testing", Purdue University School of Nuclear Engineering, West Lafayette, Indiana. (November 27, 2018).
7. E. Sooby Wood, **invited**, “Uranium Silicide Behavior in Reactor Relevant Atmospheres,” TMS 2018, ASM, Phoenix, AZ. (March 13, 2018).
8. E. Sooby Wood, **invited**, “Accident tolerant fuel development: testing for instabilities in reactor relevant conditions,” Department of Physics and Astronomy, Trinity University, San Antonio, TX. (September 19, 2017).
9. E. Sooby, **invited** “An Accelerator Driven System for Green Fission Power,” 1st Annual International EVOL Workshop, CEA, Orsay, France. (May 2012).

B. Contributed

10. Elizabeth S. Sooby, Brian A. Brigham, Geronimo Robles, Zachary Acosta, and Joshua T. White “Steam Oxidation Performance of Uranium Mononitride during Thermal Ramp and Isothermal Conditions,” Annual Meeting of the American Nuclear Society, June 6, 2021. Virtual.
11. Sooby Wood, E, Robles, G, Moczygemba, C, Cai, L, Metzger, K, Lahoda, E., “Steam Oxidation Dynamics of Alloyed U_3Si_2+X (X=Al, Cr, Nb, Y, and Zr),” Materials in Nuclear Energy Systems (MiNES 2019), Baltimore, MD, October 8, 2019.
12. Sooby Wood, E, Robles, G, Moczygemba, C, Cai, L, Metzger, K, Lahoda, E., “Steam Oxidation and Microstructural Characterization of U_3Si_2 alloyed with Al, Cr, Nb, Y, and Zr,” MS&T 2019, Portland, OR, September 30-Oct 2, 2019.
13. Sooby Wood, E, Robles, G, Moczygemba, C, Cai, L, Metzger, K, Lahoda, E., “FABRICATION AND PHASE COMPOSITION OF ALLOYED URANIUM SILICIDE FUELS,” TopFuel/Global 2019, Seattle, WA, September 2019.
14. Sooby Wood, E, Brigham, B, Montoya, C., Gaspar, M, Fernandez, A, Acosta, Z, and Gerczak, T, “Oxidation of tristructural-isotropic fuel forms in low oxidant partial pressures,” 5th Workshop on HTGR SiC Material Properties, Oak Ridge National Laboratory (May 22, 2019).
15. Wood, E. S. (Author & Presenter), Moczygemba, C., Nesloney, S., White, J., Grote, C., & Nelson, A., 2018 CARAT Annual Meeting Planning, "U-Si-X (X=Al, Cr, Y) steam oxidation screen study: Preliminary results and discussion", Westinghouse Electric Company, Prague, Czech Republic. (September 27, 2018).
16. Sooby Wood, E. (Author & Presenter), Robles, G., White, J., Grote, C., & Nelson, A.T., “Microstructural degradation of U_3Si_2 and fission product silicides exposed to H_2O containing atmospheres,” American Nuclear Society, Nuclear Fuels and Structural Materials Subtopical Meeting, American Nuclear Society, Philadelphia. (June 19, 2018). *Poster*.
17. E. Sooby Wood, “ U_3Si_2 instabilities in oxidizing and reducing atmospheres,” Materials Science & Technology (MS&T), The American Ceramic Society, ASM International, Pittsburgh, PA. (October 11, 2017). *Oral*.
18. “Al additions to U_3Si_2 to increase oxidation resistance”, 12th Pacific Rim Conference on Ceramic and Glass Technology, American Ceramic Society, Hawaii, USA, (May 2017). *Oral*.
19. “High Temperature Oxidation Behavior of U-Si and U-Si-Al Candidate Fuels,” TopFuel 2016, American Nuclear Society, Boise, Idaho, USA. (September 2016). *Oral*.
20. “Synthesis and Oxidation Testing of U-Si-Al Ternary Compounds,” NuFuel 2015, CEA, Karlsruhe, Germany. (November 2015). *Oral*.
21. “High Temperature Steam Oxidation Behavior of $MoSi_2$,” MS&T 2015, American Ceramic Society, Columbus, Ohio, USA. (October 2015). *Oral*.
22. “Ion Beam Experiment to Simulated Simultaneous Molten Salt Corrosion and Fast Neutron Damage for Advanced Fuel Cycles,” TMS, TMS, San Diego, CA, 2014. (February 2014). *Oral*.
23. “Thermal Analysis of Chloride Salt Systems for Molten Salt Reactor Concepts using STA and DSC,” HI TEMP 2014, Netzsch Gmbl, Santa Fe, NM, USA. (September 2014). *Oral*.

VII. GRANTING ACTIVITIES

A. Active, Externally Funded Programs

- Grant: Elizabeth Sooby (Principal), Amanda Fernandez (co-Principal), and Brian Jaques (co-Principal: Boise State University), "Targeted Materials Characterization and Testing of Additively Manufactured Metals and Ceramics to Inform Print/Build Data Analytics," Sponsored by Department of Energy, Nuclear Energy University Program, Federal, Total: \$800,000
October 1, 2021 - September 30, 2023; Percent Contribution: 40%
- Grant: Elizabeth Sooby (sole Principal), "Fuel Fabrication Line for Advanced Reactor Fuel Research, Development and Testing," Department of Energy Office of Nuclear Energy, Nuclear Science User Facility General Scientific Infrastructure Program, Federal, Total: \$319,925.
October 1, 2021 - September 30, 2022; Percent Contribution: 100%
- Grant Subaward: Elizabeth Sooby (UTSA-Principal), Lead Institution: University of Tennessee at Knoxville, PI: Brian Wirth, "Multiphysics fuel performance modeling of TRISO-bearing fuel in advanced reactor environments," Sponsored by Department of Energy, Nuclear Energy University Program, Federal, Total: \$3,000,000 ; UTSA: \$299,792.50
October 1, 2020 - September 30, 2023; Percent Contribution: 100%
- Grant Subaward: Elizabeth Sooby (UTSA-Principal), Lead Institution: University of Pittsburgh; PI: Wei Xiong, "Multicomponent Thermochemistry of Complex Chloride Salts for Sustain-able Fuel Cycle Technologies," Sponsored by Department of Energy, Nuclear Energy University Program, Federal, Program Total: \$400,000; UTSA: \$119,938.
October 1, 2020 - September 30, 2022; Percent Contribution: 100%
- Grant: Nash, Kelly Nash (Principal), Sooby Wood, E. (co-Principal), Millwater, H. (co-Principal), Alamaniotis, M. (co-Principal), "CONNECT- the CONSortium on Nuclear sECurity Technologies," National Nuclear Security Administration, Federal, \$2,999,994.
October 1, 2019 - September 30, 2022; Percent Contribution: 23.75%
- Sponsored Research: Sooby Wood, E. (Principal), & Coulter, K. (Co-Principal-SwRI), "Alternative Routes to U₃Si₂ Synthesis," Sponsored by Westinghouse Electric Company, Private, \$353,586.
October 1, 2018 – January 2021; Percent Contribution: 100%
- Sponsored Research: Sooby Wood, E. (sole Principal), "U-Si-X (X=Cr, Y...) Synthesis and Oxidation Resistance Screening Study Phase 2," Sponsored by Westinghouse Electric Company, Private, \$116,865.
October 1, 2018 – January 2021; Percent Contribution: 100%
- Grant: Sooby Wood, E. (Principal), & Terrani, K. (Co-Principal), "Oxidation of Tristructured Isotropic fuel forms in low oxygen and steam partial pressures and the role of matrix burn off in the oxidation rate at high temperature," Sponsored by Department of Energy, Nuclear Energy University Program, Federal, \$800,000.
October 1, 2018 - September 30, 2021; Percent Contribution: 100%

B. Proposals Currently Under Review

- Grant: Arturo Ayon (Principal), Elizabeth Sooby (co-Principal), Gabriella Romero Uribe (co-Principal), Arturo Ponce Pedraza (co-Principal), Nicholas Large (co-Principal), Abelardo Ramirez-Hernandez (co-Principal), David Restrepo (co-Principal), Ethan Ahn, (co-Principal), Mehdi Shadaram (co-Principle), and Chonglin Chen (co-Principal), "Interdisciplinary Center of Excellence in Materials Science Research, Discovery, and Student Training," Army Research Laboratory, Federal, Total: \$7,406,157
September 1, 2021 – August 31, 2026; Percent Contribution: 5%
- Grant Subaward: Sooby, E (UTSA Principal), Lead Institution: Boise State University, PI: Brian Jaques, "Experimental Investigations of Advanced LWR Fuel Fabrication to Address Uncertainties in Structural and Thermal Stability," Nuclear Regulatory Commission, Federal Budget: \$400,000, UTSA Budget: \$242,388
October 1, 2021 – September 30, 2024; Percent Contribution: 100%
- Grant: Elizabeth Sooby (Principal), Amanda Fernandez (co-Principal) and Kevin Field (University of Michigan, co-Principal), "Correlated Material Synthesis and Artificial Intelligence for Rapid Discovery and Characterization of Extreme Environment Materials," National Nuclear Security Administration, Federal, Total: \$899,998.

January 1, 2022 – December 31, 2024; Percent Contribution: 60%

4. Grant: Andrey Chabanov (Principal), Elizabeth Sooby (co-Principal) and Amanda Fernandez (co-Principal); “Thermal Imaging Infrared Camera for Research on Aerospace Materials and Devices for Extreme Environments,” Department of Defense, Federal, Total: \$173,627

July 19, 2022 – July 18, 2023; Percent Contribution: 33%

5. Grant: Elizabeth Sooby (sole Principal), “CAREER: Experimental and Computational Investigation of Hydride Structure and Formation Kinetics in d- and f-electron Intermetallics,” National Science Foundation, Federal, Total: \$713,637

September 1, 2022 – August 31, 2027; Percent Contribution: 60%**C. Past Externally Funded Programs**

1. Grant: Sooby Wood, E. (Recipient), & Ayon, Arturo (Principal), "Nuclear Fuels Research and Development Faculty Development Program at the University of Texas at San Antonio," Sponsored by Nuclear Regulatory Commission, Faculty Development Grant, \$600,000 (\$450,000 Federal, \$150,000 Cost Shared-UTSA).

July 19, 2018 – July 18, 2021; Percent Contribution: 80%

2. Subcontract: Sooby Wood, E (Principal), “Fabrication of Novel Uranium Intermetallic Compounds for Property Assessment”, UT-Battelle, LLC c/o Oak Ridge National Laboratory, Federal: \$96,882.

August 27, 2019 – May 1, 2020; Percent Contribution: 100%

3. Contract: Sooby Wood, E. (Principal), "U - Si - X (X=Cr & Y) Synthesis and Oxidation Resistance Screening Study," Sponsored by Westinghouse Electric Company, Other, \$97,769.

April 1, 2018 - September 30, 2018; Percent Contribution: 100%**VIII. TEACHING**

Physics 1 for Scientists and Engineers	93 students	TBD evaluation	Fall 2021
Fundamentals of Nuclear Energy and Materials	19 students	4.83/5 faculty evaluation	Spring 2021
Physics 1 for Scientists and Engineers (online hybrid)	147 students	4.1/5 faculty evaluation	Fall 2020
Thermal Physics	23 students	4.7/5 faculty evaluation	Fall 2019
Special Topics in Nuclear Materials	5 students	5/5 faculty evaluation	Fall 2019
Physics 1 for Scientists and Engineers	98 students	4.19/5 faculty evaluation	Spring 2019
Thermal Physics	24 students	4.70/5 faculty evaluation.	Fall 2018
Physics 1 for Scientists and Engineers	66 students	4.27/5 faculty evaluation	Spring 2018

IX. MENTORING**A. Current Fellows**

- | | | |
|-----------------------|--------------------------|-----------------------|
| 1. Dr. Brian Brigham | Postdoctoral Fellow | Oct. 2018-August 2021 |
| 2. Mr. Thomas Kirtley | Postbaccalaureate Fellow | June 2020-current |
| | Physics and Astronomy, | B.S. 2020 |

B. Current Graduate Research Assistants

- | | | |
|-----------------------|------------------------|-----------|
| 1. Geronimo Robles, | Physics and Astronomy, | PhD. 2023 |
| | Physics and Astronomy, | B.S. 2018 |
| 2. Adrian Gonzales, | Physics and Astronomy, | PhD 2022 |
| 3. Katherine Montoya, | Physics and Astronomy, | PhD 2022 |
| 4. Steven Cavazos, | Physics and Astronomy, | PhD 2024 |
| 5. Julian Valdez, | Physics and Astronomy, | M.S. 2022 |
| | Physics and Astronomy, | B.S. 2020 |
| 6. Maarten Van Hees | Physics and Astronomy, | PhD 2024 |

C. Current Undergraduate Research Assistants

- | | | |
|---------------------|------------------------|-----------|
| 1. Da Teng, | Physics and Astronomy, | B.S. 2022 |
| 2. Ethan Schneider, | Physics and Astronomy, | B.S. 2022 |

D. Dissertation Committees- as Member

- | | |
|---------------------|-------------------------|
| 1. Vicente Gonzales | (Physics and Astronomy) |
|---------------------|-------------------------|

2. Kevin Delano (Physics and Astronomy)
3. Mohammad Abdul-Moqueet (Physics & Astronomy-PhD awarded 2021)
4. Soojin Kim (Chemistry-PhD awarded 2020)
5. Ahmed Mostafa (Mechanical Engineering- PhD awarded 2020)
6. Adrian Zepeda-Galvez (Physics & Astronomy- PhD awarded 2020)

E. Former Students

1. Cole Moczygemba Physics and Astronomy, B.S. College Honors Thesis 2021
2. Adeela Malik Physics and Astronomy, B.S. 2021
3. Zachary Seligman, Mechanical Engineering, B.S. 2021
4. Javier Rufino, Physics and Astronomy, B.S., College Honors Thesis 2020
5. Zachary Acosta, Postbaccalaureate Fellow January- December 2020
Chemistry, B.S. December 2019
6. Marielle Gaspar, Physics and Astronomy, B.A. 2019
7. Sean Nesloney, Physics and Astronomy, B.S. May 2019
8. Seth Pritchard, Physics and Astronomy, B.A. May 2019
9. Hugo Espejel, Physics and Astronomy, M.S. awarded 2019-Committee Chair

X. SERVICE**A. Department of Physics**

Committee Member	P&A TT Materials Physics Search	AY 2021
Committee Member	P&A TT Materials Physics Search	AY 2020
Committee Member	Mech. Eng. TT Advanced Manufacturing Search	AY 2020
Committee Member	Transition Committee	AY 2019
Committee Member	Student Success Committee	2018- present
Faculty Advisor	Undergraduate Women in Physics	2018- present

B. College of Science Service

Committee Member	P&A Department Chair Search Committee	AY 2019
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C. University Service

Member	Radiation and Laser Safety Committee	2019- present
Delegate	UTSA Day at the Capitol	2019
Participant	Health and Safety External Review	2019
Panelist	Model United Nations: Politics and Science of Nuclear Warfare	2018

D. Professional Service

Panel Organizer	Annual Student Conference, American Nuclear Society "Academic, Research, and Scholarly Disruptions due to COVID"	2021
Invited Panelist	Annual Student Conference, American Nuclear Society "Taking Care of You: Student-Mentor Relationships"	2021
Member	American Nuclear Society Diversity & Inclusion Committee	2020-present
Member	TMS, Nuclear Materials Programming Committee	2019- present
Session Chair	TMS Conference	2021
Session Chair	MiNES Conference	2019
Session Chair	TMS Conference	2018
Session Chair	ANS Annual Meeting	2018
Reviewer: Journal	<i>Corrosion Science</i>	2019-present
Reviewer: Grant	Department of Energy Nuclear Energy University Programs	2018- present
Reviewer: Grant	Department of Energy Small Business Innovation Research	2020- present
Reviewer: Journal	<i>The Electrochemical Society Journals</i>	2018- present
Reviewer: Journal	<i>Journal of Materials (JOM)</i>	2017- present

Reviewer: Journal	<i>Journal of Nuclear Materials</i>	2014- present
E. Profession Society Memberships		
Member	American Nuclear Society	2018- present
Member	Technical Minerals, Metals and Materials Society (TMS)	2018-present
Member	American Physical Society	2017- present
Member	American Ceramics Society	2015- present
Member	American Association for the Advancement of Science	2014- present

XI. MEDIA COVERAGE AND PRESS RELEASES

1. Bruce Forey, "[Department of Energy taps UTSA to make nuclear energy safer and more cost-effective,](#)" *UTSA Today*, July 27, 2021.
2. Michael Allen, "[Ten years after Fukushima: Could new fuels make nuclear power safer?](#)" *Physics World*, February 23, 2021.
3. Alia Malik, "[UT San Antonio has reopened its labs, but only for research,](#)" *San Antonio Express-News*, June 8, 2020.
4. Brendan Gibbons, "[UTSA Researcher Studies Safer Fuels for Nuclear Power,](#)" *The Rivard Report*, March 22, 2019.
5. Tony Quesada (Editor-in-Chief), "[EDITOR'S NOTES: Nuclear project at UTSA brings out the Rickover in me,](#)" *San Antonio Business Journal*, March 8, 2019.
6. Jessica Corso (Reporter), "[UTSA to help produce accident-tolerant nuclear fuel](#)", *San Antonio Business Journal*, March 5, 2019.
7. Milady Nazir, "[UTSA funded to develop accident tolerant nuclear fuels,](#)" *EurekaAlert!*, AAAS, February 27, 2019.