Ericmoore Jossou

Assistant professor · Nuclear Science and Engineering

77 Massachusetts Avenue, Cambridge, MA 02139

ejossou@mit.edu | www.ericmoorejossoulab.com

Education

University of Saskatchewan — *Saskatoon, Canada*

PhD Mechanical Engineering — *2015 - 2019*

- Advisor: Prof. Jerzy Szpunar

African University of Science and Technology — *Abuja, Nigeria*

MS Materials Science and Engineering — *2012 - 2013*

- Advisor: Prof. Wiston Soboyejo

Ahmadu Bello University — *Zaria, Nigeria*

BS Chemistry — *2006 - 2010*

- Undergrad research advisor: Prof. Kagbu

Professional Experience

2023 - Till date	**Assistant professor**, Massachusetts Institute of Technology
2022 - 2023	**Assistant Scientist**, Brookhaven National Laboratory
2019 - 2022	**Postdoctoral Research Associate**, Brookhaven National Laboratory

Publications

Published

Riley Moeykens*, Anthony Albert-Harrup, David Simonne****, Mehmet Topsakal, Ericmoore Jossou, Design rule for industrial scale sintering of UB_4-UBC composites with high uranium density, *J. Am. Ceram. Soc.*, 109, 5 (2026):e70830.

Alejandro Burgos, **Ericmoore Jossou**, Md. Jahidur Rahman, Effect of grain boundary networks on the behavior of primary radiation damage in polycrystalline CoCrNi alloys, *J. Nucl. Mater.,* 631 (2026) 156799.

Anthony Harrup**, Riley Moeykens*, Tiankai Yao, Michael Drakopoulos, **Ericmoore Jossou**, Site Specific Porosity–Thermal Conductivity Correlations in U-10Zr fuel, *Mater., Today*, 97 (2026) 1369-7021.

Mack Cleveland*, Andrew Nelson, **Ericmoore Jossou**; Chromium doped uranium dioxide fuels: A review, Nucl. Eng. Des., 446 (2026) 114631.

David Simonne**, Riley Hultquist*, Jiangtao Zhao, Andrea Resta, **Ericmoore Jossou**, X-ray irradiation induced strain relaxation of dewetted Ni particles on modified Si substrate, *Scr. Mater.*, 270 (2026) 116940.

Mack Cleveland*, **Ericmoore Jossou**, Effects of charge state on transition metal segregation at grain boundaries in uranium dioxide, *Acta Mater.,* 302 (2026) 121634.

Riley Hultquist*, Sayantan Mondal*, David Simonne**, **Ericmoore Jossou**, Multipurpose in cell design for 3D X-ray imaging of electrochemical processes, *Rev. Sci. Instrum.*, 96 (2025) 123703.

Moses A. Adaan-Nyiak, **Mack Cleveland**, Benjamin Hewitt, **Ericmoore Jossou**, Mehmet Topsakal, Simerjeet K. Gill, Sooyeon Hwang, Kim Kisslinger, Ahmed A. Tiamiyu; Grain Boundary Decoration Suppresses Local Short-Range Ordering in Nanocrystalline High-Entropy Alloys, *Adv. Sci.*, 13, 6 (2025) e15510.

Andrew Hoffman, Haozheng Qu, Indranil Roy, Soumya Nag, Chen Shen, Chao Jiang, Yongfeng Zhang, Christopher Perlee, Mike Larsen, **Ericmoore Jossou**, Simerjeet K. Gill, Rajnikant Umretiya, Raul Rebak; New Insights on the Effects of Chemistry and Temperature on α' Precipitation During Aging of FeCrAl Alloys, *J. Nucl. Mater.,* 605 (2025) 155542.

Intekhab Alam, Moses A. Adaan-Nyiak, Sooyeon Hwang, Kim Kisslinger, Mehmet Topsakal, **Ericmoore Jossou**, Simerjeet K. Gill, Ahmed A. Tiamiyu, From phase decomposition to evaporation: A multi-modal evaluation of thermally degraded model lightweight high-entropy alloy, *Mater. Charact.*, 209 (2024) 113722.

Moses A. Adaan-Nyiak, Intekhab Alam, **Ericmoore Jossou**, Sooyeon Hwang, Kim Kisslinger, Simerjeet K. Gill, Ahmed A. Tiamiyu, Design and Development of Stable Nanocrystalline High-Entropy Alloy: Coupling Self-Stabilization and Solute Grain Boundary Segregation Effects, *Small*, 20 (2024) 2309631.

Iman Peivaste, **Ericmoore Jossou**, Ahmed A. Tiamiyu, Data-driven analysis and prediction of stable phases for high-entropy alloy design, *Sci. Rep.*, 13 (2023) 22556.

Linu Malakkal, Anil Prasad, Jayangani Ranasinghe, **Ericmoore Jossou**, Lukas Bichler, Jerzy Szpunar, Enhanced thermal conductivity of spark plasma-sintered thorium dioxide-silicon carbide composite fuel pellets, *Nucl. Eng. & Tech*., 55 (2023) 3725-3731.

Ericmoore Jossou, Ana Suzana, Longlong Wu, Jiecheng Diao, Tadesse Assefa, Ross Harder, Wonsuk Cha, Andrea Jokisaari, Kim Kisslinger, Jian Gan, Ian Robinson, Lynne Ecker, Simerjeet K. Gill, Three-dimensional imaging of irradiated chromium using Bragg Coherent Diffraction Imaging, *npj Mater. Degrad.,* 6 (2022) 99.

Ericmoore Jossou, Cheng Sun, Simerjeet K. Gill, Jian Gan, Lynne Ecker; Unravelling the early-stage periodic ordering of Kr gas bubble in Molybdenum, *J. Phys. Chem. C*, 125 (2021) 23338-23348.

Jayangani Ranasinghe, Linu Malakkal, Barbara Szpunar, Anil Prasad, **Ericmoore Jossou**, Jerzy Szpunar, Lukas Bichler; DFT and experimental study on the thermal conductivity of U_3O_8 and U_3O_8-X; (X=Al and Mo), *J. Nucl. Mater.,* 549 (2021) 1-15.

Cheng Sun, Chao Jiang, **Ericmoore Jossou**, Mehmet Topsakal, Simerjeet K. Gill, Yongqiang Wang, Lynne Ecker, Jian Gan; Self-assembly of solid nanoclusters in molybdenum under gas ion implantation, *Scr. Mater.,* 194 (2021) 1-5.

Linu Malakkal, **Ericmoore Jossou**, Jayangani Ranasinghe, Barbara Szpunar, Jerzy Szpunar; Density functional theory study of oxygen adsorption and dissociation on lower-miller index surfaces of ThN, *J. Phys. Chem. C*, 124, 45 *(2020)* 24849–24860.

Adebayo Adeleke, **Ericmoore Jossou**, Nnanna Ukoji, Adebayo Adeniyi, Peter Egbele; Properties of alkaline-earth-metal-polynitrogen materials at high pressure crystal, *ACS Omega*, 5, 41 *(2020)* 26786–26794

Simerjeet K. Gill, Mehmet Topsakal, **Ericmoore Jossou**, Xiaojing Huang, Khalid Hattar, Julia Mausz, Mohamed Elbakhshwan, Hanfei Yan, Yong S. Chu, Cheng Sun, Lingfeng He, Jian Gan, Lynne Ecker, Impact of krypton irradiation on a single crystal tungsten: Multi-modal X-ray imaging study, *Scr. Mater.,* 188 (2020) 296-301.

Jayangani Ranasinghe, Linu Malakkal, **Ericmoore Jossou**, Barbara Szpunar, and Jerzy Szpunar; Density functional theory study of the structural, mechanical and thermal conductivity of uranium dialuminide (UAl_2), *J. Nucl. Mater., 540 (2020) 1-10.*

Ericmoore Jossou, Linu Malakkal, Jaya Ranasinghe, Barbara Szpunar, and Jerzy Szpunar, Thermophysical properties $(U_xAm_{1-x})O_2$ MOX fuel, *J. Comput. Mater. Sci., 172 (2020) 109324.*

Jayangani Ranasinghe, Linu Malakkal, **Ericmoore Jossou**, Barbara Szpunar, and Jerzy Szpunar, Comprehensive study on the electronic and optical properties of α-U_3O_8, *J. Comput. Mater. Sci., 171 (2020) 109264.*

Linu Malakkal, Anil Prasad, Jaya Ranasinghe, **Ericmoore Jossou**, Barbara Szpunar, Lukas Bichler, Jerzy Szpunar, The effect of SPS processing parameters on the microstructure and thermal conductivity of ThO_2, *J. Nucl. Mater., 527 (2019) 151811*.

Linu Malakkal, Anil Prasad, **Ericmoore Jossou**, Jaya Ranasinghe, Barbara Szpunar, Lukas Bichler, Jerzy Szpunar, Thermal conductivity of bulk and porous ThO_2: Atomistic and experimental study, *J. alloys and compd.*, 798 *(2019) 507-516.*

Ericmoore Jossou, Linu Malakkal, Dzade Nelson, Antoine Claisse, Barbara Szpunar, Jerzy Szpunar; Early oxidation of defective and oxygen covered U_3Si_2 {001}, {110} and {111} surface, *J. Phys. Chem. C, 123, 32 (2019) 19453-19467.*

Linu Malakkal, Dotun Oladimeji, Anil Prasad, **Ericmoore Jossou**, Jaya Ranasinghe, Barbara Szpunar, Lukas Bichler, Jerzy Szpunar, Thermal Conductivity and Mean Free Path of CeO_2, *Sci. Rep*. 9 (2019) 6326.

Ericmoore Jossou, Md. Jahidur Rahman, Dotun Oladimeji, Benjamin Beeler, Barbara Szpunar, Jerzy Szpunar; Anisotropic thermophysical properties of U_3Si_2 fuel: An atomic scale study, *J. Nucl. Mater., 512 (2019) 1-12.*

Jaya Ranasinghe, Barbara Szpunar, **Ericmoore Jossou**, Linu Malakkal, Jerzy Szpunar, Study on radial temperature distribution of aluminum dispersed nuclear fuels: U_3O_8-Al, U_3Si_2-Al, and UN-Al; *Nucl. Eng. & Rad. Sci.*, 4 (2018) 031020-1.

Ericmoore Jossou, Ubong Eduok, Dzade Nelson, Barbara Szpunar, Jerzy Szpunar; Oxidation behaviour of U_3Si_2: An experimental and first principles investigation, *Phys. Chem. Chem. Phys.*, 20 (2018) 4708-4720.

Adebayo A. Adeleke, **Ericmoore Jossou**, Yansun Yao; Stable BaCl solid at high pressure: Prediction and characterization using first principles approach, *J. App. Phys.*, 122 (2017) 235902.

Oladimeji Dotun, Malakkal Linu, Barbara Szpunar, **Ericmoore Jossou**, Jerzy Szpunar; First principles study of thermal transport properties of gallium phosphide, *Int. J. of Metall. & Met. Phys.,* (2017) 2:006.

Ericmoore Jossou, Dotun Oladimeji, Linu Malakkal, Simon Middleburgh, Barbara Szpunar, Jerzy Szpunar, First-principle study of defects and fission product behaviour in uranium diboride, *J. Nucl. Mater.,* 494 (2017) 147-156.

Ubong Eduok, **Ericmoore Jossou**, Jerzy Szpunar; Enhancing surface protective performance of chitosanic hydrogel by nano-CeO_2 dispersion for API 5L X70 alloy: Experimental and theoretical examination of the contributions of CeO_2, *J. Mol. Liq.,* 241 (2017) 684–693.

Ubong Eduok, **Ericmoore Jossou**, Ahmed Tiamiyu, Joseph Omale, Jerzy Szpunar; Ceria/Acrylic Polymer Microgel Composite: Synthesis, Characterization, and Anticorrosion Application for API 5L X70 Substrate in Chloride-Enriched Medium, *Ind. Eng. Chem. Res.*, *56* (19), (2017) 5586–5597.

Ericmoore Jossou, Linu Malakkal, Barbara Szpunar, Dotun Oladimeji, Jerzy Szpunar; A first principles study of the electronic structure, elastic, and thermal properties of UB_2, *J. Nucl. Mater.,* 490 (2017) 41-48.

In Review

Anthony Albert Harrup, Mathias Boulanger, Sarah Cole, Mehmet Topsakal, Tiankai Yao, and Ericmoore Jossou, Effects of processing technique on microstructural evolution of U–Zr alloy: A combined XRD and SEM analysis, *J. Nucl. Mater.,* Under Review.

Mathias Boulanger*, **Ericmoore Jossou**, Interlaced dynamic XCT reconstruction with spatio-temporal implicit neural representations, *IEEE Computational Imaging*, Under Review.

Elina Charatsidou, Angus Wylie, Nils Wikström, Maria Giamouridou, Riley Moeykens*, Robert J.W. Frost, **Ericmoore Jossou**, Michael P. Short, Pär Olsson, Thermal diffusivity of ion-irradiated uranium mononitride, *J. Nucl. Mater.,* Under Review.

Mack Cleveland*, Karsten Skildheim*, **Ericmoore Jossou**; Grain boundary assisted grain growth in chromia doped UO_2, *Phys. Rev. Mater.*, Under Review.

David Simonne**, Weiyin Chen, Kevin Woller, Hyojun Lim, Anthony Albert-Harrup**, Hui Zhong, Ju Li, **Ericmoore Jossou**, Impact of Ni self-irradiation on the structural degradation of NMC811 cathodes, *Phys. Chem. C*, Under Review.

Sayantan Mondal*, David Simonne**, DongHun Ryu, Junho Seong, Nishant Mishra, Mack Cleveland*, Riley Hultquist*, Jiangtao Zhao, Nelson Dzade, Ill Ryu, Ian Robinson, **Ericmoore Jossou**, Imaging dislocation dynamics in nickel-based alloys under normal light water reactor chemistry, *Nat. Commun.*, Under Review.

Awards, & Fellowships

2026	**NSF Early CAREER Award**, National Science Foundation
2026	**Ruth and Joel Spira Awards for Excellence in Teaching**, MIT
2025	**ANS Faculty PAI Outstanding Faculty Awardg**, MIT
2020 & 2021	**Spotlight Award**, Brookhaven National Laboratory
2019	**George Ira Hanson Postgraduate Award**, UofS
2019	**Russell (Russ) William Haid Memorial Awards**, UofS
2018 & 2019	**Lauretta Schoenau Scholarship**, UofS
2018-2019	**Devolved Scholarship**, UofS
2015-2018	**International Dean's Scholarship**, UofS
2007-2010	**Local Scholarship Scheme**, Petroleum Technology Development Fund

Presentations

Invited Talks

Ericmoore Jossou; Doped UO_2 sintering and defect chemistry, **Invited talk** at Los Alamos National Lab, September 15, 2026, Los Alamos, New Mexico.

Ericmoore Jossou; In Situ and operando X-ray imaging of microstructural evolution in nuclear materials, **Invited talk** at Rensselaer Polytechnic Institute*, September 9, 2026,* Troy, New York.

Ericmoore Jossou; Fuel cladding chemical interaction and high temperature phase transformation in U-10Zr metallic fuel, **Invited talk** at Microscopy and Microanalysis, August 2-6, 2026, Milwaukee, Wisconsin.

Ericmoore Jossou; Extended lattice defects evolution in coupled extreme environments, **Invited talk** at Materials Day 2025, October 30, 2025, in Cambridge, Massachusetts.

Ericmoore Jossou; Understanding dopant chemistry in the sintering of chromia-doped uranium dioxide fuel, **Invited talk** at 2025 MRS Fall Meeting, November 30-December 5, 2025, in Boston, Massachusetts.

Ericmoore Jossou; Developing thermal conductivity correlations from XCT analysis, **Invited talk** at Univ. Grenoble Alpes, CNRS, Grenoble INP, SIMaP– July 8, 2025, F-38000 Grenoble, France.

Ericmoore Jossou; Improving radiation resistance of nuclear fuels for current and next generation of nuclear reactors, **Invited talk** at Rutgers University–April 29, 2025, at Rutgers University– April 29, 2025, New Brunswick, NJ 08901, United States.

Ericmoore Jossou; Designing the next generation of nuclear fuels within the African context, **Invited talk** at AMRS– December 16 – 19, 2024, at the Kigali Conference and Exhibition Village, Kigali, Rwanda.

Ericmoore Jossou; Nuclear energy solution for the African continent, **Invited talk** at Plasma Science and Fusion Center– October 20, 2024, Cambridge, MA, United States.

Ericmoore Jossou; Irradiation assisted hydrogen embrittlement of nickel: BCDI study, **Invited talk** at Materials Science & Technology– October 6 – 9, 2024, Technical Meeting & Exhibition, Pittsburg, PA, United States.

Ericmoore Jossou; In situ X-ray imaging of materials in extreme environments, **Invited talk** at Materials Science & Technology– October 6 – 9, 2024, Technical Meeting & Exhibition, Pittsburg, PA, United States.

Ericmoore Jossou; Imaging fabrication and radiation induced defects in nuclear materials, **Invited talk** at University of Massachusetts at Lowell– October 2, 2024, Lowell, MA, United States.

Ericmoore Jossou; Launching An Academic Career Panel Discussion, **Invited talk** at University of Saskatchewan– September 17, 2024, Saskatoon, SK, Canada.

Ericmoore Jossou; Rethinking nuclear energy solution for the African continent, **Invited talk** at MIT Africa lecture series– April 24, 2024, Cambridge, MA, United States.

Ericmoore Jossou; Rethinking fundamental materials processes in extreme environments, **Invited talk** at Pennsylvania State University– February 06, 2024, State College, PA, United States.

Ericmoore Jossou; Transforming Engineering problems to Scientific questions for Research, Invited talk at Kwame Nkrumah University of Science and Technology– October 5, 2023, Accra, Kumasi, Ghana.

Ericmoore Jossou; Rational materials design for nuclear energy applications, **Invited talk** at Idaho National Laboratory– July 10, 2023, Idaho Falls, Idaho, United States.

Ericmoore Jossou; Rational materials design for nuclear energy applications, **Invited talk** at Schwarzman College of Computing, Massachusetts Institute of Technology – November 1, 2022, Cambridge, Massachusetts, United States.

Ericmoore Jossou; Materials design for nuclear applications, **Invited talk** at Nuclear Science and Engineering Department, Massachusetts Institute of Technology – April 25 – 26, 2022, Cambridge, Massachusetts, United States.

Ericmoore Jossou; Rational materials design for energy applications, **Invited talk** at the Research series of the Nuclear Science and Technology Department, BNL, October 2020.

Contributed Presentations

Ericmoore Jossou, Cheng Sun, Simerjeet K. Gill, Jian Gan, Lynne Ecker; Unravelling the early-stage periodic ordering of Kr gas bubble in Molybdenum, TMS, February 27 – March 3, 2022, Anaheim, California, United States.

Ericmoore Jossou, Cheng Sun, Simerjeet K. Gill, Jian Gan, Lynne Ecker; Unravelling the early-stage periodic ordering of Kr gas bubble in Molybdenum, MRS, May 8-13, 2022, Honolulu, Hawai'i, United States.

Ericmoore Jossou, Mehmet Topsakal, Xiaojing Huang, Khalid Hattar, Julia Mausz, Mohamed Elbakhshwan, Hanfei Yan, Yong S. Chu, Cheng Sun, Lingfeng He, Jian Gan, Lynne Ecker, Simerjeet K. Gill; X-ray based nanodiffraction to study strain in materials for nuclear energy, TMS, March 15 – 18 2021, Virtual.

Ericmoore Jossou, Md. Jahidur Rahman, Benjamin Beeler, Barbara Szpunar, and Jerzy Szpunar; Anisotropic thermophysical properties of U_3Si_2 fuel: An atomic scale study, Canadian Nuclear Society, 9th International Conference on Simulation Methods in Nuclear Science and Engineering October 2019, Saskatoon, Saskatchewan, Canada.

Ericmoore Jossou, Nelson Dzade, Barbara Szpunar, and Jerzy Szpunar; Oxidation behaviour of U_3Si_2: An Ab Initio Study, Canadian Nuclear Society, 8th International Conference on Simulation Methods in Nuclear Science and Engineering October 2018, Ottawa, Ontario, Canada.

Ericmoore Jossou, Linu Malakkal, Dotun Oladimeji, Barbara Szpunar, Jerzy Szpunar; Stability of noble gases in uranium diboride: An atomic-scale study, Nuclear Materials Conference February – October 2018, Seattle, Washington, United States.

Ericmoore Jossou, MICCOM Computational Summer School, The University of Chicago, Chicago, IL, July 2017.

Ericmoore Jossou, Linu Malakkal, Dotun Oladimeji, Barbara Szpunar, Jerzy Szpunar; First Principles Study of Accident Tolerant Nuclear Fuel: UB_2 and UO_2, TMS February – March 2017, San Diego, California, United States.

Ericmoore Jossou, Linu Malakkal, Jaya Ranasinghe, Barbara Szpunar, and Jerzy Szpunar; Ab-initio study on U_3O_8, WIEN2K workshop July 2016, Hamilton, Canada.

Teaching Experience

Spring 2026	**Advanced Nuclear Materials Characterization: Theory and Practice**, Instructor
Spring 2026	**Modeling with Machine Learning: Nuclear Science and Engineering Applications**, Instructor
Fall 2025	**Introduction to Nuclear Engineering and Ionizing Radiation**, Instructor
Spring 2025	**Modeling with Machine Learning: Nuclear Science and Engineering Applications**, Instructor
Fall 2024	**Introduction to Nuclear Engineering and Ionizing Radiation**, Instructor
Spring 2024	**Modeling with Machine Learning: Nuclear Science and Engineering Applications**, Instructor
Fall 2023	**Introduction to Nuclear Engineering and Ionizing Radiation**, Instructor

Mentoring

2023-Till date	**Mack Cleveland**, PhD, MIT
2024-Till date	**Sayantan Mondal**, PhD, MIT
2024-Till date	**DongHun Ryu**, PhD, MIT
2025-Till date	**Tuong Phung**, PhD, MIT
2025-Till date	**Sarah Cole**, PhD, MIT
2026-Till date	**Mathias Boulanger**, PhD, MIT
2024-Till date	**Dr. Anthony Albert-Harrup**, Postdoc, MIT
2024-2026	**Dr. David Simonne**, Postdoc, MIT
2023-2025	**Riley Hultquist**, MS, MIT
2023-2025	**Riley Moeykens**, MS, MIT
2023-2025	**Nidhish Sagar**, MS, MIT

Outreach & Professional Development

Service and Outreach

2025-Till date	**The Global Center for Advanced Materials and Manufacturing, SUNY Polytechnic Institute**, Advisory Board Member
2025-Till date	**TMS Extraction & Processing Division**, Council member
2023-Till date	**NSE and EECS Undergraduate Committee**, Member
2023-Till date	**SOE Postdoctoral Fellowship Program**, Committee Member
2023-Till date	**Tayebati Postdoctoral Fellowship Program**, Committee Member

Development

MS&T 2025 symposium organizer

TMS 2026 symposium organizer

MRS Spring 2026 symposium organizer

Peer Review

I review for Materials Science and Engineering, Nuclear Materials and Applied Physics journals such as Journal of Nuclear Materials, Journal of Applied Physics, Materials Research, Journal of Physics and Chemistry of Solids, Materials Science and Engineering A & B, Journal of Materials Engineering and Performance, International journal of heat transfer, ACS Omega, Scientific reports, Nano Convergence, Nature communication materials etc

Professional Memberships

Member, Materials Research Society

Member, The Minerals, Metals and Materials Society

Member, American Nuclear Society