

NICP SANI 2024 Host Faculty List

Massachusetts Institute of Technology [Department of Nuclear Science and Engineering](#)

Name	Research Fields	Web URL	Web URL 2	E-mail address
1 Anne White (Department Head)	Experimental plasma physics and diagnostics / Fusion systems	https://web.mit.edu/nse/people/faculty/white.html		whitea@mit.edu
2 Benoit Forget	Monte Carlo transport methods / Deterministic transport methods / Multiphysics coupling / Uncertainty Quantification	https://web.mit.edu/nse/people/faculty/forget.html		bforget@mit.edu
3 Emilio Baglietto	Turbulence Modeling / Unsteady flow phenomena / Multiphase flow and boiling / Virtual Reactor Modeling	https://web.mit.edu/nse/people/faculty/baglietto.html		emilob@mit.edu
4 Matteo Bucci	Development of advanced diagnostic tools and techniques / Boiling heat transfer / Nanotechnologies for advanced heat transfer performance / Integration of sensors, simulations and machine learning tools for advanced health monitoring of complex systems	https://web.mit.edu/nse/people/faculty/bucci.html		mbucci@mit.edu
5 Jacopo Buongiorno	Nuclear Batteries / Study on the Future of Nuclear Energy in a Carbon Constrained World / The offshore floating nuclear power plant / Fundamentals of Boiling / Surface effects on boiling heat transfer / Nanofluids for Nuclear Applications / Ultra-low Thermal-Conductivity Materials for Cold-Water Wetsuits	https://web.mit.edu/nse/people/faculty/buongiorno.html		jacopo@mit.edu
6 Paola Cappellaro	Quantum Engineering / Control of quantum registers with NV centers in diamond / Diamond magnetometer and precision metrology / Quantum simulation and transport of quantum information	https://web.mit.edu/nse/people/faculty/cappellaro.html		pcappell@mit.edu
7 Areg Danagoulian	1. Verification of nuclear disarmament treaties via resonant phenomena and physical cryptography. 2. Multiple Monoenergetic Gamma Radiography and other methodologies for cargo screening	https://web.mit.edu/nse/people/faculty/danagoulian.html		aregjan@mit.edu
8 Jack Hare	Pulsed power for High Energy Density Laboratory Astrophysics / Magnetic Reconnection / Magnetohydrodynamic Turbulence	https://web.mit.edu/nse/people/faculty/hare.html		jdhare@mit.edu
9 Zachary Hartwig	Intermediate energy proton irradiation of materials / High-field superconducting magnet technology	https://web.mit.edu/nse/people/faculty/hartwig.html		hartwig@mit.edu
10 Ian H. Hutchinson	- Fusion Energy: Toroidal magnetic confinement experiments. Tokamak control. - Plasma Physics: MHD equilibrium and stability, divertor plasma phenomena. - Interaction of flowing plasma with absorbing bodies such as probes, dust particles, space-craft, or moons. - Plasma measurements. The second edition of my book Principles of Plasma Diagnostics was published in 2002. - Plasma Physics and Controlled Fusion: I am an International Advisor and former Editor in Chief of this journal, one of the top three Plasma Physics journals in the world. - Physical Review E: I am plasma section sub-editor of this famous American Physical Society journal.	https://www-internal.psfc.mit.edu/~hutch/		hutch@psfc.mit.edu
11 Alan Jasanoff	Pushing the frontiers of MRI / Beyond blood flow / The next generation of contrast agents	https://web.mit.edu/nse/people/faculty/jasanoff.html		jasanoff@mit.edu
12 R. Scott Kemp	The Electrical Grid as a Weapon of Mass Destruction / Hypersonic Weapons / Detection and Prevention of Foreign Bioweapons Programs / Radiation Fingerprinting for Nuclear Archeology / Detection of Clandestine Nuclear Facilities / Strategic Stability and Space-Based Radar / K-transform Tomography / Physical Cryptographic Warhead Verification for Nuclear Disarmament	http://insp.mit.edu/r-scott-kemp/		
13 Richard K. Lester	Energy Systems Innovation and Policy / Innovation and Creativity / Local Innovation Systems	http://web.mit.edu/nse/lester/		
14 Ju Li	Overcoming Timescale Challenges in Atomistic Simulations / Energy Storage and Conversion / Materials in Extreme Environments and Far from Equilibrium	https://web.mit.edu/nse/people/faculty/li.html		lju@mit.edu
15 Mingda Li	The research focus of Mingda and his group (Quantum Measurement Group) is to design novel materials characterization methods and to augment existing characterization methods to probe key properties of quantum materials that were either considered not measurable or not readily measurable with existing technique and analysis methods.	https://web.mit.edu/nse/people/faculty/mlf.html		mingda@mit.edu
16 Nuno F. Loureiro	MAGNETIC RECONNECTION / CONFINEMENT AND TRANSPORT IN FUSION PLASMAS /	https://web.mit.edu/nse/people/faculty/loureiro.html		nflour@mit.edu
17 Korosh Shirvan	Development of Advanced Fuels / Small Modular Reactor Optimization / Advanced Data Analytics	https://web.mit.edu/nse/people/faculty/shirvan.html		kshirvan@mit.edu
18 Michael Short	The Development of Fouling Resistant Materials / In-Situ Mesoscale Nuclear Materials Science with Transient Grating Spectroscopy (TGS) / The Stored Energy Fingerprints of Radiation Damage	https://web.mit.edu/nse/people/faculty/short.html		herciam@mit.edu
19 Haruko Murakami Wainwright	Integrated Environmental Monitoring at Nuclear Contaminated Sites / Nuclear Waste Disposal / Environmental Resilience in Nuclear Energy	https://web.mit.edu/nse/people/faculty/wainwright.html		hmwainw@mit.edu
20 Dennis G. Whyte	- Magnetic Fusion Energy: Boundary plasma physics, advanced plasma confinement regimes in tokamaks, plasma diagnostics, mitigation of disruption damages - Plasma-Surface Interactions: basic physics of plasma-material interfaces, dynamic measurement techniques for material evolution under plasma bombardment, implications of plasma-surface interactions in magnetic fusion reactors - Accelerators and Surface Analysis: low-energy nuclear scattering techniques for material analysis and damage, development of in-situ surface diagnostic methods for magnetic fusion	https://web.mit.edu/nse/people/faculty/whyte.html		whyte@mit.edu
21 Bilge Yildiz	The science and technology of materials development for energy conversion applications in harsh environments	https://web.mit.edu/nse/people/faculty/yildiz.html		byildiz@mit.edu
22 Boris Khavkovich	Molecular structure of molten salts / Neutron metal guides manufactured by replication / Wolter-mirrors based Neutron microscope	http://nrl.mit.edu/people/boris-khavkovich		bkh@mit.edu

NICP SANI 2024 Host Faculty List

North Carolina State University Department of Nuclear Engineering

Name	Research Fields	Web URL	Web URL 2	E-mail address
1 Jason Hou	Multi-physics reactor simulation, advanced reactors, fuel cycle analysis, uncertainty quantification, machine learning in engineering applications, and nuclear power plant simulator	https://www.ncsu.edu/people/jasonhou/		jason.hou@ncsu.edu
2 Xu Wu	Scientific Machine Learning, Calibration, Validation and Uncertainty Quantification	https://www.ncsu.edu/people/xwu27/		xwu27@ncsu.edu
3 Igor A. Bolotnov	Thermal hydraulics, High resolution simulations of two-phase flows with interface capturing methods, simulations of boiling flows	https://www.ncsu.edu/people/igorbolotnov/		igor_bolotnov@ncsu.edu
4 Mohamed Bourham	Plasma-matter interaction, plasma propulsion and thrusters, fusion engineering, plasma surface modification, particle accelerators and electron beam irradiation systems, x-ray sources for medical and screening imaging, materials synthesis and coatings, shielding and radiation attenuation studies, nuclear and mixed waste disposal, drycasks and high-level waste packaging studies.	https://www.ncsu.edu/people/bourham/		bourham@ncsu.edu
5 Robert B. Hayes	Health Physics, Nuclear Waste Management, Nuclear Nonproliferation, Nuclear Forensics, Nuclear Criticality Safety, Radiation Shielding, Radiation Detection, Novel Nuclear Reactor Designs and Radiological Air Monitoring	https://www.ncsu.edu/people/rbhayes/	https://www.ncsu.edu/rdna/	rbhayes@ncsu.edu
6 Mihai A. Diaconescu	Theories, applications, and simulation-based techniques in risk sciences such as traditional and dynamic probabilistic risk assessment, reliability analysis, resilient systems design, probabilistic physics of failure modeling, and Bayesian inference	https://www.ncsu.edu/people/madiacon/		madiacon@ncsu.edu
7 Benjamin Beeler	Computational Nuclear Materials Science: atomistic modeling; multiscale modeling, advanced reactor nuclear fuels, molten salts, advanced cladding materials, density functional theory, molecular dynamics	https://www.ncsu.edu/cmmsg/		bwbeeler@ncsu.edu
8 Jacob Eapen	Materials theory (phonons, liquids and disordered materials) and multiscale modeling (atomistic, mesoscale), nuclear and energy materials (high performance alloys, graphite, SiC composites, molten salts, metal hydrides, superionic conductors, nuclear fuel)	https://www.ncsu.edu/people/jacob.eapen/		jacob.eapen@ncsu.edu

University of Michigan Nuclear Engineering & Radiological Sciences

Name	Research Fields	Web URL	Web URL 2	E-mail address
1 Fei Gao	<ul style="list-style-type: none"> - Fundamental understanding of ion-solid interaction and radiation effects in ceramics and reactor materials, interfacial and nanostructure evolution of semiconductors, radiation detector materials, and development and application of multi-scale computer simulation for materials modeling. - Multi-scale computer simulations of microstructure evolution of solids under irradiation employing various computational methods, including density functional theory (DFT), ab initio molecular dynamics, time-dependent DFT, and tight-binding calculations, molecular dynamics simulations, long-time dynamics, kinetic Monte Carlo, and cluster dynamics. - Degradation of spent nuclear fuel canisters - Swift heavy ion damage in materials - Ceramics for nuclear waste forms, fuels and fusion reactor applications - Radiation response and signal generation in detector materials 	https://ners.engin.umich.edu/people/gao-fei/		gaofei@umich.edu
2 Igor Jovanovic	Radiation detection, lasers and optics	https://ners.engin.umich.edu/people/jovanovic-igor/		ijov@umich.edu
3 Xiaodong Sun	<ul style="list-style-type: none"> - Thermal-hydraulics and reactor safety - Two-phase flow experimentation and modeling - Interfacial structure characterization - Thermal-hydraulics in advanced high-temperature reactors (gas-cooled, fluoride salt cooled, or liquid metal cooled) - High-temperature compact heat exchangers 	https://ners.engin.umich.edu/people/sun-xiaodong/		xdsun@umich.edu
4 Aditi Verma	<ul style="list-style-type: none"> - How can a fundamental understanding of design be used to improve design practice, design tools, and engineering pedagogy? - How can design processes be made more open and participatory such that epistemic plurality and inclusivity are achieved as part of the design process? - How can insights from design research be applied to the designs of policies and institutions for the governance — both innovation and regulation — of nuclear technologies? 	https://ners.engin.umich.edu/people/verma-aditi/		aditive@umich.edu
5 Majdi Radaideh	<p>The Artificial Intelligence and Multiphysics Simulations (AIMS) lab focuses on the intersection between reactor design, nuclear multiphysics modeling and simulation, advanced computational methods, and machine learning algorithms to drive advanced reactor research and improve the sustainability of the current reactor fleet. Examples of ongoing AIMS projects are:</p> <ol style="list-style-type: none"> 1- Advanced reactor design and safety analysis of high temperature gas-cooled microreactors. 2- Nuclear reactor control with hybrid deep reinforcement learning and model predictive control. 3- Multiobjective optimization of expensive simulations of small modular reactors with adaptive surrogates. 4- Development of Large Language Models for detection of public support of nuclear power on social media. 5- Fast data assimilation techniques for nuclear digital twins with variational Bayesian inference. 6- Model-agnostic explainable AI methods for black-box nuclear reactor codes and applications. 	https://ners.engin.umich.edu/people/radaideh-majdi/		radaideh@umich.edu
6 Yang Zhang	<p>Matter</p> <ul style="list-style-type: none"> - Rare events and long timescale phenomena in complex material systems - Physics and chemistry of liquids, glasses, and complex fluids, especially under interfacial/extreme/non-equilibrium conditions (water, metallic liquids, molten salts, ionic liquids, electrolyte solutions) - Statistical mechanics and molecular fluid mechanics theories, accelerated molecular simulations, understandable AI methods <p>Neutron scattering, sources, and instrumentation</p> <p>Machine</p> <ul style="list-style-type: none"> - Soft robots and human-compatible machines - Swarm robots and collective intelligence - Robots in extreme environments 	https://ners.engin.umich.edu/people/zhang-yang/	https://z.engin.umich.edu/	vzyz@umich.edu
7 Lumin Wang	Radiation effects and material characterization	https://ners.engin.umich.edu/people/wang-lu-min/		lmwang@umich.edu

NICP SANI 2024 Host Faculty List

University of Wisconsin-Madison Department of Nuclear Engineering & Engineering Physics

	Name	Research Fields	Web URL	Web URL 2	E-mail address
1	Paul Wilson	Computational methods for simulating complex nuclear energy systems	https://energ.engr.wisc.edu		paul.wilson@wisc.edu
2	Adrien Couet	Nuclear Materials Irradiation and Corrosion	https://madcor.labs.wisc.edu/		couet@wisc.edu
3	Ben Lindley	Reactor physics, advanced reactor design, integrated energy systems, safety analysis	https://reti.neep.wisc.edu		lindlev2@wisc.edu
4	Kumar Sridharan	Materials processing testing and analysis	https://mat-research.engr.wisc.edu/		kumar.sridharan@wisc.edu
5	Yongfeng Zhang	Computational Nuclear Materials	https://zhang.ep.wisc.edu/		y Zhang2446@wisc.edu
6	Juliana Pacheco Duarte	Experimental and Computational thermal-hydraulics and safety	https://heats.neep.wisc.edu		pachecoduarte@wisc.edu
7	Stephanie Diem	Experimental plasma physics	https://pegasus.ep.wisc.edu/		sdiem@wisc.edu
8	Benedikt Geiger	Experimental plasma physics	https://turbulence.neep.wisc.edu/	https://hsx.wisc.edu/	benedikt.geiger@wisc.edu
9	Oliver Schmitz	Experimental plasma physics	https://3dpsi.engr.wisc.edu/staff/sc-hmitz-oliver/		oschmitz@wisc.edu
10	Carl Sovinec	Computational plasms physics	https://cptc.wisc.edu/sovinec-research/		csovinec@wisc.edu
11	Chris Hegna	Plasma theory and computation	https://directory.engr.wisc.edu/ncp/faculty/hegna_chris		chegna@wisc.edu
12	Adelle Wright	Computational plasms physics	https://wright-lab.notion.site/		adelle.wright@wisc.edu

Texas A&M University Department of Nuclear Engineering

	Name	Research Fields	Web URL	Web URL 2	E-mail address
1	John Ford	Radiation safety; radiation detection or medical/research applications of radioisotopes; space radiation environment and countermeasures			thasl@tamu.edu
3	Karen Kirkland	Steam/water two-phase flow experiments, reactor safety systems, power engineering			vierow@tamu.edu
4	Jean Ragusa	Radiation transport simulation for reactor using deterministic methods. Dr. Ragusa would like to interview suitable candidates before agreeing.			jean.ragusa@tamu.edu
5	Carlo Fiorina	Multiphysics modeling and Simulation of advanced reactors			carlo.fiorina@tamu.edu
6	Yang Liu	Advanced reactor modeling and analysis using physics-informed machine learning			y-liu@tamu.edu

University of California, Berkeley Department of Nuclear Engineering

	Name	Research Fields	Web URL	Web URL 2	E-mail address
1	Massimiliano Fratoni	Advanced nuclear reactors design / Uncertainty quantification and sensitivity analysis / Multi-physics modeling and simulation / Accident tolerant fuel / Advanced fuel cycles analysis / Geological repository and far-field criticality / Fusion blanket design			maxfratoni@berkeley.edu
2	Jasmina Vujic	Advanced nuclear Reactor Physics/Design, Transport theory modeling and simulation, Application of radiation in medical diagnostics and therapy, Non-proliferation			vujic@nuc.berkeley.edu