

1598th Geological Society of Washington Meeting: March 6, 2024

Dr. Will Fox, Princeton Plasma Physics Laboratory

Title: Bringing celestial plasmas to the laboratory

Abstract: The most explosive and energetic phenomena in the universe, ranging from super-heated material accreting around black holes, to cosmic ray acceleration by supernova remnants, to solar flares and magnetospheric substorms, all rely on the physics of magnetized plasmas, including processes such as shocks, dynamos, and magnetic reconnection. A new experimental technique has opened up in recent years to study these fundamental processes in magnetized plasmas using laboratory experiments. I will discuss recent experiments at the National Ignition Facility, the worlds most energetic laser, which are providing new insights and understanding these processes, allowing detailed and valuable new observations of plasma behavior, which complement spacecraft and remote sensing observations of plasmas in space or cosmic environments.

Dr. Will Fox is a Principal Research Physicist at the Princeton Plasma Physics Laboratory. He received a BA in Physics from Princeton University in 2001 and a Ph.D. in Physics from MIT in 2009. After his Ph.D. he worked as a Research Scientist at the University of New Hampshire Space Science Center before joining PPPL in 2013. His research is in the field of high-energy-density, laser-heated plasmas, which are relevant to laboratory fusion energy and to studying fundamental processes in astrophysical plasmas. Dr. Fox was awarded the American Physical Society Division of Plasma Physics Thomas H. Stix Award in 2019 for Outstanding Early Career Contributions to Plasma Physics Research, and shared the 2020 John Dawson Award for Excellence in Plasma Physics Research.

Dr. Genevieve Maricle, USAID

Title: International climate policy: multilateral cooperation and society-wide action

Abstract: Genevieve will speak about lessons from her work at various levels of international climate policy - from cooperation and negotiation at the global level (in a range of fora - the annual COP meetings, the G20, UN General Assembly, and Global Climate Action Summit) to action and engagement at the most local. She will speak to why effective climate action must ultimately be whole-of-society, and how we can work to get there.

Dr. Genevieve Maricle is as a Senior Advisor in the U.S. Agency for International Development (USAID), where she has served as a lead on both international climate policy and the humanitarian-development-peace nexus. She recently returned to USAID from the National Security Council, where she served as Director of Global Development. While there, she focused on priority U.S. climate and development issues.

She also worked at the World Wildlife Fund as Director of Climate Policy Action, served as senior policy advisor on sustainable development and climate change to Samantha Power in her role as U.S. Ambassador to the UN, and as a AAAS science fellow at USAID. While at USUN, she was the deputy lead U.S. negotiator for the Sustainable Development Goals. She received her

BA in mathematics and environmental science from Northwestern University, and PhD from the University of Colorado at Boulder in climate science policy.

Dr. Doug Wicks, Advanced Research Projects Agency-Energy (ARPA-E)

Title: Addressing the Mineral Abyss for the Energy Transition

Abstract: Climate change is perhaps humankind's largest existential crisis, with unabated emissions wreaking havoc on global environmental systems. Great technological leaps, unimaginable until recently, are scaling up to meet the challenge. BUT deployment of these will be hobbled by access to mineral-derived resources, leaving humankind unable to execute the transition. Dr. Wicks will put forth ideas and concepts to stimulate discussion about how mines of the future could not only supply the transition but also, at the same time, address environmental and social needs. The answers literally lie in the rocks beneath our feet, please join in the discussions of how to unleash what is there.

Dr. Douglas Wicks currently serves as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). His focus at ARPA-E is on waste-to-energy technologies. Wicks joins ARPA-E from Imerys, a French industrial minerals production and processing company, where he was most recently the Director of Transformational and External Innovation. At Imerys, he developed an innovation network comprised of academic, contract research organizations, start-ups and strategic partners. Before joining Imerys, Wicks worked in a variety of roles at several start-up companies focused on innovative materials. Dr. Wicks began his career at Bayer Corporation, where he ultimately became Vice President of Research for the Coatings and Colorants division. Wicks earned a B.S. in Chemistry from North Dakota State University and a Ph.D. in Polymer Science and Engineering from the University of Massachusetts Amherst.