

Materials Chemistry Seminar

Friday, January 26, 2024

BRWN 4102 ~ 11:30 am

“Advanced probing of the Electronic Structure of Materials at Birck Nanotechnology Center’s Characterization Facility”

Abstract: Two research scientists from Purdue’s Birck Nanotechnology Center will present the measurement science of their tools. Dr. Dimitri Zemlyanov will present surface science techniques such as imaging X-ray photoelectron spectroscopy (XPS), low energy electron diffraction (LEED), UHV STM/AFM, high-resolution electron energy loss spectroscopy (HREELS) and other capabilities in his lab in Birck. Dr. Neil Dilley will present magnetic and electrical characterization techniques of materials and devices such as SQUID-based magnetometry, electrical probing stations in extreme temperature/magnetic field environments, ferromagnetic resonance (FMR), thermal measurements of heat capacity and thermal conductivity, and other advanced characterization. In both short talks we will discuss the science of the measurement as well as some interesting research results produced.



NEIL DILLEY

Research Manager, Purdue Birck Nanotechnology Center

Biography: Dr. Neil Dilley is the research manager directing the Birck Nanoscience Labs, including surface, electrical, magnetic, optical, and quantum measurements. He is a physicist specializing in cryogenic measurements and design, with a background in magnetism and superconductivity. He joined Birck in 2016 after working for 16 years at Quantum Design, Inc. in both R&D and applications where he instructed and collaborated with materials researchers around the world.

Reference Articles:

Dilley:

<https://pubs.acs.org/doi/10.1021/acs.nanolett.2c03286?ref=pdf>

<https://doi.org/10.1063/5.0140695>

Zemlyanov:

<https://doi.org/10.1088/0957-4484/27/43/434002>

<https://doi.org/10.1088/1361-6528/aaa6ef>



DIMITRI ZEMLYANOV

Senior Research Scientist-Surface Science, Purdue Birck Nanotechnology Center

Biography: Dmitry Zemlyanov received his Ph.D. in Physics and Mathematics from Novosibirsk State University, Russia, in 1995. He currently holds the position of Senior Research Scientist-Surface Science Application at Birck Nanotechnology Center, Purdue University. Before joining Purdue, he held research and teaching positions at esteemed scientific institutions in Russia, Ireland, and Germany. Over his career, he has contributed significantly to the field, publishing more than 170 journal papers in the domains of surface science, catalysis, electrical engineering, and materials science. At Purdue, Dmitry collaborates extensively with research groups from the College of Science and the College of Engineering. His collaboration facilitates the development and application of advanced scientific instrumentation for surface characterization purposes.