



Ultrafast Nonlinear Optics

The Films, Interfaces, and Nanostructures of Oxides (FINO) Lab (PI: Dr. Ryan Comes) and the Ultrafast Nonlinear Optics (UNO) Lab (PI: Dr. Wencan Jin) in the Department of Physics at Auburn University have two openings for postdoctoral researchers experimental condensed matter physics of low-dimensional materials in two separate collaborative projects. Both projects are described below. Prospective candidates are encouraged to apply by email to both faculty members and indicate which project is more suitable to their skillset.

The PIs, the Department of Physics, and Auburn University are committed to supporting a diverse and collaborative research team with a healthy work-life balance. Members of historically underrepresented and marginalized groups are encouraged to apply.

To apply for the position, please send your application directly to ryan.comes@auburn.edu and wzj0029@auburn.edu with the subject line: **2023 Postdoctoral Research Position Application**. Please include in the application (i) a cover letter describing your background, research interest, and preferred position, (ii) CV with a list of publications, and (iii) contact information of two or more references. For more details on our groups, visit <http://comes.auburn.edu> and <http://jinlab.auburn.edu>

Department of Energy, Office of Science Project

The project focuses on *in situ* studies of 3d and 5d transition metal oxides both at Auburn and at Argonne National Laboratory. Collaborative studies at Brookhaven National Laboratory will also be pursued. The successful candidate selected for this position will be involved in a Department of Energy-funded research project involving interfacial studies of atomically-precise complex oxide thin films at Auburn and at user facilities such as synchrotrons and nanoscale science research centers. An emphasis in the research is placed on X-ray spectroscopy (photoemission and absorption) to characterize the properties of these materials during and after film growth. Our unique MBE system is connected to an appended X-ray photoelectron spectroscopy (XPS) system, making it the only academic lab in the United States with integrated hybrid MBE and XPS capabilities. To complement the laboratory capabilities at Auburn, we will perform *in situ* spectroscopy studies at the Advanced Photon Source, which is equipped with an MBE on an X-ray diffraction and X-ray absorption spectroscopy beamline.

A PhD in experimental condensed matter physics and/or materials science is required by the time of the appointment. Competitive candidates are expected to have experience with the synthesis of epitaxial thin films via MBE (preferred), PLD, or sputtering, as well as characterization techniques for films (such as AFM, XRD, XPS, RBS). Experience in X-ray spectroscopy, electronic transport and magnetometry measurements, optical spectroscopy, and/or electron microscopy will be a plus.

The appointment can begin immediately with funding secure until 2025. The position is renewable based on performance and comes with a competitive salary (a minimum of \$55,000 yearly) and a comprehensive benefit package.

Air Force Office of Scientific Research Project

The project focuses on interfacial coupling between 2D chalcogenide materials and epitaxial complex oxide thin films. The candidate will lead efforts in a Department of Defense/AFOSR EPSCOR project to examine interfacial phenomena in these heterostructures via second harmonic generation, synchrotron X-ray and UV spectroscopy, transport measurements, and low energy electron microscopy. Partnerships with the Air Force Research Laboratory and Brookhaven National Laboratory will be pursued involving atmospheric-sensitive measurements of these materials.

A Ph.D. or an equivalent degree in experimental condensed matter physics and/or material science and engineering is required by the time of the appointment. Evidence of effectively communicating research through journal papers and conference presentations. Candidates should have experience in at least one of the below areas: 1) Expertise in nanofabrication and cleanroom techniques, especially 2D materials transfer in a glovebox; 2) Expertise in magnetic and electrical transport measurements of 2D devices; 3) Experience in photoemission spectroscopy (XPS, ARPES, and XMCD); 4) Experience in ultrafast laser and optical spectroscopy. Because the work involves partnership with the Air Force Research Laboratory (AFRL), U.S. citizenship for the candidate is preferred to enable access to AFRL facilities.

The appointment can begin in August 2023 with funding secure until 2026. The position is renewable based on performance and comes with a competitive salary (a minimum of \$55,000 yearly) and a comprehensive benefit package.

Auburn University is an AA/EEO/Vet employer and committed to building a diverse and inclusive community.