

Research Physicist in Quantum and Nonlinear Optics
Air Force Research Laboratory, Sensors Directorate, Dayton, OH
KBRWyle, Beavercreek, OH

Job Description:

A research position is currently open in the area of experimental quantum and nonlinear optical spectroscopy with an emphasis on the investigation of light-matter interactions in solid state systems. Primary responsibility will be in the characterization and exploitation of strain induced, spatially deterministic, non-classical light generation in two-dimensional materials; both monolayers as well as heterostructure devices. Coherent control (resonance fluorescence), electrical excitation, cavity coupling (dielectric and plasmonic), valleytronics, and ultrafast dynamics are all of interest, as well as the investigation of other material platforms for single and/or entangled photon generation.

Ongoing additional projects within the group include: (1) Nonlinear optics in epsilon near zero materials, (2) Non-volatile phase change materials for reconfigurable photonics and electronics, (3) mid-infrared metasurfaces, and (4) plasmonics. Depending on the candidate's background and interests, the opportunity may exist to make contributions to these projects.

Education:

PhD in Physics, optical sciences, electrical engineering, or related disciplines.

Knowledge, Skills and Abilities:

US citizenship is required for this position.

- Must have a strong technical background, including publication record, with hands on experience in an optics laboratory
- Knowledge of ultrafast and cw laser systems
- Experience in quantum optical characterization of non-classical light sources such as single and/or entangled photons
- Experience with linear and nonlinear spectroscopic techniques
- Understanding of semiconductor optical and electronic behavior, especially in 2D materials
- Experience working with high vacuum and low temperature systems
- Ability to work independently with minimal oversight while also being able to discuss results with a multidisciplinary team in an effective manner
- Communicate with collaborators, write journal manuscripts, and present results at conferences
- Assist in mentoring summer interns at the high school, undergraduate, and graduate level

Additional desired skills:

Computer modelling and simulation, atomic force microscopy, device fabrication, cleanroom experience, superconductivity, pump – probe spectroscopy

Contact:

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