

To
The faculty search committee,
The Department of Physics and Astronomy,
Texas Tech University, Lubbock, TX

Dear committee members,

I am writing to apply for the tenure-track position at the Assistant Professor level in experimental condensed matter physics. I completed Ph.D. in Physics from University of Utah. I now work as a postdoctoral research associate at Center for Nanoscale Science and Technology (CNST) of National Institute of Standard Technology (NIST) in the Electron Physics Group. My research plan focuses on measurements of nanoscale charge and spin dynamics with the goal of understanding the mesoscale physical processes that control device properties.

During first part of my Ph.D., I developed and demonstrated an on-chip, calibration-free absolute magnetometer based on carbon based materials. In the last part of my Ph.D., I imaged individual pairs of phosphorus donor atoms and silicon dangling bonds with atomic spatial resolution and I quantify the energetic distribution of silicon dangling bonds. Now, in my current research, I focus on measurement of magnetization dynamics of magnetic nano-devices (~ 100 nm) for magnetic memory applications.

My proposed research projects are focused on understanding and controlling mesoscale interactions such as spin-orbit interaction and nuclear hyperfine interaction that influence charge and spin transport in condensed matter systems. I will investigate these mesoscale interactions by employing nanoscale electron spin resonance techniques. Therefore, successful execution of my proposed projects will help to improve device properties and functionalities.

During my doctoral and postdoctoral research, I started with an empty laboratory and transformed it into a productive research facility, while continuing output of good publications. The diversity in my publications demonstrates that I actively and successfully collaborate across the disciplines. I am confident that my proposed research will bring strength and synergy to the department.

In addition to developing a successful research program, my teaching goal is to develop core skills and confidence among students to translate classroom knowledge into real life problem solving skills. During my teaching assistant at University of Utah, I taught over 100 undergraduate students. I also assisted in mentoring three undergraduate students in their undergraduate research programs such as REU and SURF.

Please find a copy of my curriculum vitae with publication list, research statement, teaching statement in the attachment. I am excited about the possibility to contribute to your department and will look forward to hearing back from you. Thank you for your consideration.

Sincerely,



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