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Oak Ridge National Laboratory
Thin films and Nanostructures Group
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Dear Members of the Faculty Search Committee,

October 24, 2018

I am writing to apply for the tenure-track faculty position in the Department of Physics and Astronomy at Texas Tech University (TTU). I am submitting my curriculum vitae along with a list of publications, names and contact information of my professional references, research statement, and teaching philosophy.

I am currently a postdoctoral research associate in thin films and nanostructures group, led by Dr. Ho Nyung Lee at Oak Ridge National Laboratory. During my Ph.D. and postdoctoral trainings, I have extensively used pulsed laser epitaxy (PLE) to grow functional oxide thin films and heterostructures and have performed advanced multiscale characterizations ranging from nano- to micro- to macroscales. Utilizing this comprehensive approach of material synthesis, design, and advanced characterizations—my important scientific contributions are to date, 1) developing PLE growth-process for single crystal high-entropy oxide epitaxial films, 2) discovering an electrochemical approach to modulate oxygen stoichiometry that enable a room temperature metal-insulator transition in epitaxial vanadium dioxide thin films at nanoscale, and 3) made the first experimental observation of room temperature ferroelectricity in lead-free tin-titanate thin films. Based on my Ph.D. and postdoctoral research works, I have 13 first author publications and 17 more as a coauthor. I have also expanded interactions with different research groups in physical, chemical, and materials science departments as well as with national-user facilities by leading successful user-proposals. With these experiences and my unique skill-set in synthesis-structure-properties research, my vision at TTU is to establish a leading research group in the area of design and control of novel functional oxides for advanced electronic applications.

At TTU, my primary research thrust will be to focus on using atomic-scale synthesis capability of PLE and advanced multi-scale thin film characterization techniques for designing, exploiting, and controlling emergent properties of functional oxides. To stay at the cutting-edge of experimental condensed matter research, I will make use of national user facilities and seek external collaborations to produce high-impact work. As detailed in my research statement, my research program will lead collaborative efforts between experimental and theoretical groups in the Department of Physics and Astronomy and will provide opportunity to build projects with major research centers such as, the Nano Tech Center (NTC) and the High Performance Computing Center (HPCC). In addition, I will make every effort to mentor and prepare our students to pursue a successful career in experimental condensed matter physics.

I am very excited to become a part of the vibrant research community at TTU. Thank you very much for your time and consideration. I look forward to discussing my application and qualifications in more detail.

With best regards,

A handwritten signature in black ink, appearing to be "Ys" or "Yogesh".

Yogesh Sharma

Professional References

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Prof. Ram S. Katiyar (Ph. D. Advisor)

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