



Yogesh Sharma | Oak Ridge National Laboratory
Postdoctoral Research Associate | Thin films and Nanostructures Group
sharmay@ornl.gov | Materials Science & Technology Division
Phone: (865) 241 7628 (O) | 1 Bethel Valley Rd, Bldg 4100
(787) 455 2448 (M) | Oak Ridge, TN 37831-6056

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 "YJ" or similar initials.

Yogesh Sharma

Professional References

Dr. Ho Nyung Lee (Post-Doctoral Supervisor)
Materials Science & Technology Division
Oak Ridge National Laboratory
A-133 Building 4100, 1 Bethel Valley Rd, Oak Ridge, TN 37831
hnlee@ornl.gov
(865) 574-9782

Dr. Thomas Zac Ward (Post-Doctoral Supervisor)
Materials Science & Technology Division
Oak Ridge National Laboratory
A-143 Building 4100, 1 Bethel Valley Rd, Oak Ridge, TN 37831
wardtz@ornl.gov
(865) 299-0474

Prof. Ram S. Katiyar (Ph. D. Advisor)
Department of Physics and Institute for Functional Nanomaterials
University of Puerto Rico
Facundo Bueso Building
San Juan, PR 00936-8377, USA
rkatiyar@hpcf.upr.edu
(787) 688-5884

Prof. Seungbum Hong (Ph. D. Co-advisor)
Department of Materials Science and Engineering,
KAIST
291 Daehak-ro, Yuseong-gu,
Daejeon-34141, South Korea
seungbum@kaist.ac.kr
+82-10-5825-2135

Prof. James F. Scott (Scientific collaborator)
Schools of Chemistry and Physics
University of St. Andrews
Purdie Building, North Haugh, St. Andrews, KY16 9ST, UK
jfs4@st-andrews.ac.uk
+44-1334-463-019

Dr. Sergei V. Kalinin (Scientific collaborator)
Institute for Functional Imaging of Materials
Oak Ridge National Laboratory
J-G58 Building 8610, 1 Bethel Valley Rd, Oak Ridge, TN 37831
sergei2@ornl.gov
(865) 241-0236