NORFOLK STATE UNIVERSITY

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Date: September 20,2018

To: Faculty Search Committee: Physics (Experimental Cond. Matter) at Texas Tech University
Ref: Application for the ***Professor*** *position in* Physics at Texas Tech University
Position ID: 5088BR

Dear Search Committee:

I am very much interested for the position of ***Professor*** in **Condensed Matter Physics** at Texas Tech University in field of Experimental Condensed Matter Physics. Currently, I am a tenured Professor in the Department of Engineering, and also at the Center for Material Research, a premier internationally reputed research Center at Norfolk State University for experimental condensed matter Physics, materials science and nanotechnology, and working/focusing research and education/teaching in the areas of a broad areas of condensed matter experimental and computational Physics. *My major research is on the development of Nanomaterials and Nanotechnology for energy and biomedical applications.* These include:

(a) Development of Advanced functional materials and devices: Oxide semiconductors, Phase Change materials, Detectors, MTJ, Ferro/Piezo/magnetoelectric and Multilayers.
(b) 2-D materials and emerging novel nanomaterials and devices.
(c) Growth and fundamental Studies of advanced semiconductor materials.
(d) Development and understanding of Nanomaterials for bio-medical applications, Nanostructures and nanotechnology for point-of-care diagnostic tools.
(e) Plasmonic nano-/ metamaterials and nanostructures for molecular sensing.
(f) Development of Nanomaterials for energy harvesting, and storage.

I have extensive research, administrative experience and accomplishments at national and international level. I have demonstrated how I have created positive impact, and played a major role in bringing the programs to national and global prominence in the filed of nanotechnoloy. I have served as the project director of **THREE** major Center proposals of excellence managing research, education, training and people. My experience at NSU, VCU, UVA and internationally acclaimed organizations, such as ISTEC-Japan, Clarendon lab, Oxford University, Physics Department Tokyo University, and BARC-India allowed me to demonstrate strategic, visionary, and entrepreneurial leadership at research, department and university levels.

I am a leading researcher and academician in the field of condensed matter Physics, having a solid track record in materials development, computation and/or characterization for the next generation materials synthesis (including 2D materials) and engineering of nano- and quantum materials for energy generation and storage, biomedical applications, plasmonics sensing, innovative electronics, detectors, advanced functional materials as well as biomedical sensor applications. I have established a state-of-the-art multimillion Dollar ($15M) Nanotech lab at NSU and developed a strong funding history, directing three "*Center of Excellence*", establishing strong research and academic culture by graduating and mentoring a cohort of students. I manage micro/nano-materials fabrication, characterization, Nanotechnology/Thin film labs and *Clean-room facility.* I am an internationally recognized scientist and earned reputation in the field of experimental condensed matter Physics, especially in the field of nanotechnology. *I am broadly focused on developing teaching (both graduate and undergraduate) and research programs in the areas of several frontiers of condensed matter Physics, including renewable energy using*

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nanotechnology to semiconductors, nanomaterials and devices for energy & biomedical sensors, and detection technologies, measurement/metrology, or emerging nanoscale materials Physics & Engineering fields related to cross-disciplinary programs, which may very much complement to Physics Department, Engineering as well as Nanotech Center.

I have bought about $27M to NSU through grants by my leadership and managed **THREE** Center grants. I have demonstrated my ability to work closely and productively with faculties and Federal agencies (NSF, DoD, NASA, DoE etc.), corporate and industry partners in securing external funding, and I have made a significant contribution in shaping the graduate program in Materials science and engineering as well establishing a new Mechanical Engineering by securing funding through center grants. I have strong potential to bring external funding.

In recent years, I have made several very important innovative and original research discoveries in the field for advancing next generation advanced functional materials. My significant novel research findings gained national and international recognition. I have extensively developed Thin Film and Nanotechnology lab with state-of-the-art synthesis and broad areas of characterization of materials and phenomena using transmission/ FE microscopy, electron beam lithography techniques for materials Characterization/fabrications, metrology, Chemical/Physical/Magnetic/Optical and Spectroscopic techniques. My stellar research accomplishment has received sustained international acclaim and recognition from my peers.

I have published more than 300 refereed papers in reputed international journals, several book chapters and more than 180 presentations in national and international conferences and symposium. I have been awarded several prestigious awards, including University distinguished faculty award (2010), research mentor of the year (2007-2016), and Research excellence by the Government of India (2011). I am the recipient of 2015-***SCHEV*** *(State Council of Higher Education of Virginia)* ***Awards for outstanding faculty of Virginia***. I have demonstrated experience in establishing domestic and international research relationships and partnerships through my previous international experiences. I have an established team of researchers through out international Universities and US, including *Brookhaven and Oakridge National labs*. *I have demonstrated skill in establishing synergies among diverse areas.*

Considering my above-mentioned qualifications, interdisciplinary approach to teaching, research and education on condensed matter Physics with emphasis on materials discovery, materials design, *including* a solid track record in condensed matter experimental research in a broad area, nanomaterials development and/or characterization for energy, biomedical and biosensor applications, high-quality scientific and scholarly achievements, outstanding funding history and track record in student and faculty mentoring, I strongly feel that I would be a suitable candidate for a **Professor** position. *My research and teaching expertise will establish a strong base and synergy with other faculties at your Physics Department*. I would be thankful for providing me the opportunity. Hope to receive a favorable reply.

Best regards,
Yours sincerely,

Aswini K. Pradhan, Ph.D.
Professor of Electrical Engineering and Center for Materials Research & Engineering