

## Letter of Intent

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Dear Search Committee Members,

I wish to apply for an Associate Professor position in the field of energy and sustainable development in the Department of Physics at Texas Tech University.

I have been working at the University of Houston Center for Advanced Materials as a Research Associate Professor since 2007. Currently, I am serving as an Associate Professor at the University of Tabuk, Kingdom of Saudi Arabia. Besides my teaching load, I am in charge of the Renewable Energies Laboratory at the Faculty of Science. I am also serving as the adviser for the Vice-President of research at the University of Tabuk.

I have a Ph.D. degree in Physics, MS and BS degrees specialized in microelectronics and electronics engineering, respectively. I started my academic career working on experimental condensed matter physics: nitride and oxide thin films for high temperature high power electronic devices and electron field emission applications. Currently, I am working on the development of advanced nanodielectric materials and nanostructured carbon/silicon devices for energy storage solutions. To advance the above research efforts and cut down on fabrication expenses, I have setup and used computational finite element method (FEM) software “COMSOL” for multi-physics coupling simulation tasks. With this software, I am able to handle unlimited physics combination (i.e., AC/DC, Heat Transfer, RF/optical, MEMS, Batteries & Fuel Cells, and Structural Mechanics devices). I am modeling these materials at the nanoscale level so that new classes of nanomaterials and devices may emerge.

In addition to my research experiences, I have a solid teaching/mentoring experience in solid state physics, integrated electronics, circuits design, electrical measurements, and modeling/simulation. I also served as an adviser and supervisor for many graduate students from both Physics and Electrical Engineering Departments.

As a young scientist and Principal Investigator, I managed and led successfully multiple projects worth \$2.5M+ mostly from the major federal agencies in USA: National Science Foundation, Department of Energy, and Department of Defense. I was awarded 4 US patents on renewable energy related technologies. I remain aggressively active in applying for grants and

contracts. With my track record in reaching out to most public/private entities and potential collaborators, I hope to build a successful and funded research programs on energy storage, harvesting, and generation in your Department. My research efforts will be supported by sophisticated design, meaningful simulation, fabrication, and characterization tools. I am also committed to teach a range of innovative courses related to nanomaterials and nanotechnology at both undergraduate and graduate levels. Being on the Editorial board of a number of Nano-Science and Engineering related journals, I will be ready to communicate the research results in highly scholarly papers.

In summary, I believe that my expertise in Solid State Physics and electronics engineering with strong experimental and theoretical background, is well-rounded and is suited for the position requirements. Being a conscientious researcher and excellent educator, I can make major contributions to your institution.

During my past tenure at the University of Houston Center for Advanced Materials, I have gathered good knowledge and experience from different successful projects. I also gained substantial experience and knowledge in technology patenting, transfer, and commercialization through Foresight Science & Technology and Development Capital Networks corporations. Therefore, I think I can be instrumental in transferring fundamental know-how into applied research generating as a result significant intellectual property values.

I have enclosed with the present letter of intent a copy of my curriculum vitae including a full list of my publications, my research and teaching statements, names and addresses of four references, and a certificate of recognition from the Office of the President of the University of Houston - Texas.

Sincerely,

Dr. Nacer Badi