Postdoctoral/Research Associate Positions at Khalifa University, Masdar Institute in collaboration with MIT and Harvard Medical School

Advanced Materials and 3D Printing Lab (AM3DP) at Khalifa University, **Masdar** invites applications for Postdoctoral and Research Associate positions to work on a multi-disciplinary collaborative project. Successful candidate(s) will work at AM3DP lab and will be based in the Mechanical Engineering department at Masdar. These positions warrant regular communication with the international collaborative team: **Massachusetts Institute of Technology (MIT)** and **Harvard Medical School**.

Project Description

The goal of this proposed research is to design additive manufacturing-enabled multifunctional composites with hybrid microstructure and designed-in properties. A combined multiscale modeling and experimental approach will be employed in conjunction with detailed material characterization techniques. The Research Fellow(s) will work in the areas of design, additive manufacturing, characterization and testing of nanoscale, multiscale and multifunctional composites with an objective of optimizing structural and functional response under a range of loading conditions. Candidates shall have a PhD degree in a relevant discipline (Mechanical, Materials or Aerospace Engineering) from a reputable university.

Position #1 Ref: CIRA012018, Theoretical/Computational Modeling

Background and Experience in two or more of the following areas are essential

- Strong background and experience in multiscale modeling of hybrid/multifunctional composites.
- Multi-physics through-process modeling of Additively Manufactured Cellular materials
- Impact damage modeling of multiscale composites
- MD Simulation of CNT/Graphene polymer composites
- Modeling of thermal, electrical and piezoresistive behavior of multiscale hierarchical composites or nanocomposites
- Experience in writing user subroutines (for example UMAT for Abaqus FEA), working knowledge of MATLAB, Digimat FE, OptiStruct, Maple/Mathematica and Python scripting; COMSOL Multiphysics.

Position #2 Ref: CIRA022018, Synthesis, Multiscale-characterization and Experiments

Background and Experience in two or more of the following areas are essential

- Strong background and experience in nano- and micro-structural characterization and macroscale testing of multiscale hybrid/multifunctional composites, including damage and/or fracture.
- Additive Manufacturing of nanocomposites, fiber-composites and lattice materials
- Experimental characterization of thermal, mechanical, electrical and Piezoresistive behavior of multiscale hierarchical composites

Desired Skills:

- Established track record evidenced by publications in top quality journals
- Excellent verbal and written communication skills
- Positive attitude, flexibility, willingness and desire to work in a multidisciplinary international research group
- Demonstrated ability to formulate, plan and conduct research with specific objectives and milestones
- Demonstrated ability to work autonomously and in team-oriented research environment
- Strong analytical skills, inter-personnel skills, and innovative thinking

About Khalifa University, Masdar Institute

The newly-established Khalifa University is a world-class, research-intensive institution, seamlessly integrating research and education to produce world leaders and critical thinkers in applied science and engineering. Khalifa University endeavors to be a leader among research intensive universities of the 21st century, while catalyzing the growth of Abu Dhabi and the UAE's rapidly developing knowledge economy. Masdar Institute was created in collaboration with the Massachusetts Institute of Technology (MIT), integrates theory and practice to incubate a culture of innovation and entrepreneurship, working to develop the critical thinkers and leaders of tomorrow. Masdar Institute is situated in Masdar City (www.masdar.ae), an emerging global clean-technology cluster that aims to be one of the world's most sustainable urban developments, powered by renewable energy and providing students and researchers with a unique opportunity to live and learn in a true "living laboratory" environment.

Package

These positions will offer a very competitive tax-free salary package and will be for an initial duration of 12 months, extendable (up to 3 years) depending on the performance.

Application submittal information

Application materials should include: Cover letter describing the applicant's current position and how his/her experience matches the position requirements, Curriculum Vitae, Statements of research interests and E-mail contact information for at least three references. Materials must be submitted electronically as a single PDF to s.kumar@eng.oxon.org specifying Ref. No in the subject line. Review of applications will begin immediately and continue until the positions are filled. Candidates are expected to start at the earliest possible date. While we thank all

applicants for their interest, only those under consideration will be contacted for a follow-up interview. Informal enquiries about the positions may be made to: Dr. Kumar Shanmugam, Associate Professor, Department of Mechanical Engineering (Email: s.kumar@eng.oxon.org)