



In collaboration with



Advanced Materials and Multifunctional Structures (AMMS) Group at **Masdar Institute (MI)** is seeking suitably qualified candidates for PhD positions. At **AMMS**, we concentrate our research efforts in the broad area of Solid Mechanics applied to Multiscale Modeling of advanced engineering materials and structures. At **AMMS**, we undertake multi-disciplinary research in order to understand the mechanical and functional response of materials and structures at various spatial & temporal scales through theoretical & computational modeling and simulation. This approach is combined with experiments. Current research focuses on novel concepts that combine materials, mechanics and physics to produce multifunctional systems. We are currently looking for candidates for the following research projects (some of these will be jointly carried out with MIT collaborators). All these projects involve analytical and computational modeling, prototyping using 3D printing and experimental evaluation.

Multiple PhD and Postdoctoral Positions: Spring 2015

Project Title	Sustainable High-Performance Thermal Barrier Coatings – An Integrated Approach
Open for	3 PhD
Project Description	This research focuses on engineering high-performance thermal barrier and protective coating systems through <u>modelling its deposition processes</u> , study its <u>manufacturing</u> , <u>characterize its microstructure</u> , to feed information into <u>multi-scale constitutive models</u> , <u>multi-scale modelling of its microstructure evolution</u> and <u>Fracture</u> (in service) as well as experimental aspects (including In-situ SEM testing at temperature) of thin and thick film coatings to predict the system-level performance of such coating systems.
Project Area	Mechanical, Materials, and Aerospace Engineering

Project Title	Carbon Nanostructured (CNS) Composite Materials for Energy Efficient Electrical Power Transmission
Open for	1 PhD
Project Description	Multi-scale computational modelling of material architectures of CNS-based materials and systems, The role of nanostructural engineering in modifying macroscopic features of CNS-based composites, Prototyping/Fabrication using 3D printing. This inter-disciplinary research outcome would enable us

	to develop and design new hybrid, multi-functional materials for both structural and non-structural applications at several length scales.
Project Area	Mechanical, Materials, and Aerospace Engineering

Project Title	Improved Barrier Performance of Polyolefin Coatings
Open for	1 PhD
Project Description	This research focuses on Modelling, Characterization and design of polymeric nano-composite coatings for Improved Oxygen Barrier Performance using, Clay Nanoplatelets, Graphene etc. and adopting Multi-scale computational modelling approach and Atomistic/Molecular Dynamics Simulation
Project Area	Mechanical, Materials, Chemical and Aerospace Engineering

Project Title	(Lockheed Martin funded project) CNT based Composites
Open for	Research Engineer: Computational Solid Mechanics
Project Description	This research focuses on Modelling, and Computational Material design of Composite materials. Candidate will have a MS Degree in computational solid mechanics with substantial experience in the application and development of finite element code. Previous experience in applied mathematical modelling is essential.
Project Area	Mechanical, Materials, and Aerospace Engineering

These positions provide excellent opportunity for collaboration with research groups at MIT and an excellent compensation package (full tuition, health benefits, accommodation and monthly stipend-perhaps the best in the world). Please send your queries via email with a CV including the GRE (quantitative score > 155 (or 700)) and TOEFL (above 91) scores and with publications (if you have any) as a single PDF document, clearly indicating the position you are applying for in the subject line to Dr. S. Kumar, Masdar Institute of Science & Technology, Abu Dhabi, UAE. Email: s.kumar@eng.oxon.org. Once you submit the online application which is available on our website www.masdar.ac.ae, you will be notified about the pending documents and the status of your application. The deadline to submit all documents to complete your application is **10 November 2014 for Spring 2015 admission**. Please note that your application will only be evaluated if it's complete along with all supporting documents. Please contact Student enrollment manager at Masdar if you need any further information.

Masdar Institute may under certain circumstances consider waiving GRE requirements for highly-qualified applicants. MIT faculty review the quality of theses produced under the Masdar Institute [Master of Science](#) degree programs, and Masdar Institute graduates receive a certificate jointly from MIT and MI in addition to their diploma from Masdar Institute.

About [Masdar Institute of Science and Technology](#)

Masdar Institute (www.masdar.ac.ae) is the world's first graduate-level university dedicated to providing real-world solutions to issues of sustainability. The Institute's goal is to become a world-class research-driven graduate-level university, focusing on advanced energy and sustainable technologies. The Institute, which 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. The goal of the Institute is to develop, over a period of years, indigenous R&D capacity in Abu Dhabi, addressing issues of importance to the region in critical areas such as: renewable energy, sustainability, environment, water resources, microelectronics and advanced materials. The Institute offers graduate degree programs (MSc & PhD) in science and engineering disciplines with a focus on advanced energy and sustainable technologies. 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.