Advertisement
PhD Candidate

COHMAS
Composite and Heterogeneous Material Analysis and Simulation

Modeling and Numerical Simulation of Electrical and Mechanical Properties of Nano-composites

Introduction

The Division of Physical Sciences and Engineering at King Abdullah University of Science and Technology (KAUST) invites applications for a PhD Student in Mechanical Engineering at the Composite and Heterogeneous Material Analysis and Simulation Laboratory (COHMAS).

We seek a highly motivated candidate who will be involved in the modeling and numerical simulation of electrical and mechanical properties of nano-particles (such as carbon nanotubes and graphene) composites. The end goal is to develop a complete computational platform which will allow the prediction and optimization of mechanical, electrical and piezo-resistive properties of nano-composites. The key words relating to the PhD are: large-scale computing of RVEs, carbon nanotube network, geometric modeling, microstructure analysis, computational mechanics and up scaling and high performance computing. At the end of this PhD activity the student should have built a systematic computation tool to bridge the complex micro-structural networks to the resulting effective properties of nanocomposites.

Please contact us for a further description of the project.

Qualifications

The successful candidate must hold a Master of Science degree in Mechanical Engineering, Applied Mathematics or Computer Science. A strong background in theoretical mechanics (continuum mechanics, up scaling techniques, mechanical behavior of engineering materials), applied mathematics and high performance computing is expected.

Only students with excellent grades and demonstrated English language proficiency need apply. The ideal candidate must have a minimum of B+ average and must have passed the TOEFL examination.

Appointment

The candidate will be expected to start as soon as possible. However, applications will continue to be considered until the position is filled.

Benefits

KAUST is a new University located on the shores of the Red Sea in a western-style "campus-city" in Saudi Arabia. The community has many things to offer including: housing, healthcare, shopping, dining, movie theatres, and many parks and sport facilities (including world-class golf course, sailing facilities, water skiing, fishing, gym facilities with swimming pools, soccer fields, basketball fields, running tracks, etc). The campus has a public transport system which is excellent and free.

The university research facilities include the seventh fastest supercomputer “Shaheen XC40” in the world

(according to the TOP500 list announced on July 13, 2015, at the International Supercomputing Conference in Frankfurt, Germany) and the extensive world-class nanofabrication and characterization facilities, including a fully-equipped class 100 clean room, central imaging and characterization facilities, and several focused research centers.

Application Requirements

If interested, please provide us with your CV including all grades relating to your graduate and undergraduate studies Interested applicants should send their complete application packets to:

COHMAS administrator
Xianhou Nie
xianhou.nie@kaust.edu.sa

Please copy (cc:) all applications to:
Dr. Fei Han (fei.han@kaust.edu.sa) and
Prof. Gilles Lubineau (gilles.lubineau@kaust.edu.sa)

Please use as subject for your email: PhD – Simulation of Nanocompoites

About KAUST and the COHMAS laboratory

The Composite and Heterogeneous Material Analysis and Simulation Laboratory (COHMAS) is located at the King Abdullah University of Science and Technology and forms part of the Physical Science and Engineering Division.

COHMAS develops and validates techniques to achieve the better design of composite materials based structures (The more information can be found in http://cohmas.kaust.edu.sa). Our general research activities cover:

- Multiscale damage modeling in composites: micromechanics, mesoscale damage mechanics for structural application, molecular mechanics, homogenization
- Computational strategies for multimodel problems: gluing techniques between models at different scales
- Inverse problems for the identification of material parameters based on full-fields measurements and computed tomography
- Mechanics of multiscale reinforced composites: nanoreinforced materials, carbon nanotubes, carbon nanofibers
- Aging and degradation of composite structures submitted to severe environmental conditions

Every project we undertake seeks to develop an integrated approach to material analysis including advanced experimental characterization, advanced modeling and simulation.