

PhD (Early Stage Researcher) position as part of the Marie Curie ITN project CERMAT2 “New ceramic technologies and novel multifunctional ceramic devices and structures”

ESR1: Mechanical Modelling of Ceramic Materials

University of Trento, Italy

The Solid & Structural Mechanics Group at the University of Trento would like to announce the opportunity for a PhD study commencing the **1st January 2014**.

Applications are being invited for full-time PhD study in the following area of research:

Mechanical Modelling of Ceramic Materials

The candidate should carry out research in Mechanical modelling of ceramic materials with these particular objectives:

- Development of computational tools for the modelling and simulation of the production processes, based on new constitutive theories for the description of the mechanical properties of ceramic materials.
- Analysis of criticality and defects, delamination, interaction of cracks with small impurities, microcracks and rigid inclusions; exploring micropolar effects on the macroscopic behaviour, possibly triggered by local rotations of particles at the microscopic level.
- Definition of testing protocols for the calibration of material parameters appearing in the mechanical models.

Support

The position is financed by a Marie Curie Fellowship.

Requirements

To be considered for PhD enrolment, candidates must fulfill the following requirements:

Career Stage Requirement

Early Stage Researchers (ESR) must, at the time of recruitment by the host organisation (1st January 2014), be in the first four years (full-time equivalent research experience¹) of their research careers and not yet have been awarded a doctoral degree.

Mobility Requirement

Due to trans-national mobility requirements the Early Stage Researcher **must not have resided or carried out his/her main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the reference date**. Compulsory national service and/or short stays such as holidays are not taken into account. After the completion of the project, further job opportunities may be available.

1 Full-Time Equivalent Research Experience is measured from the date when a researcher obtained the degree which would formally entitle him or her to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the researcher is recruited or seconded, irrespective of whether or not a doctorate is or was ever envisaged.

Further Requirements

Required Education Level

Degree	Degree which entitles to embark on a doctorate
Degree Field	Engineering, Applied Mathematics or Physics

Required Research Experiences

Research Field	Solid Mechanics, Material Modelling and Computational Mechanics
Years of Research Experience	Maximum 4

Required Languages

Language	ENGLISH
Language Level	Good

Application

All interested persons fulfilling the above listed requirements are invited to send as soon as possible and not after September 15, 2013 your CV to: irena.jatro@ing.unitn.it with the object "CERMAT2 PhD Position".

Description of the research group

The hosting research team is the Solid & Structural Mechanics Group, see:

<http://www.ing.unitn.it/dims/ssmg/>

The research team is composed of three full professors (D. Bigoni, L. Deseri, N. Pugno), two associate professors (M. Gei, A. Gajo), three assistant professors (F. Dal Corso, A. Piccolroaz and R. Springhetti), one visiting professor, 3 post-docs and six PhD students. The research team manages three laboratories.

- Laboratory for Physical Modeling of Structures and Photoelasticity
- Laboratory of Bio-Inspired & Graphene Nanomechanics
- Computational Solid and Structural Mechanics Lab

The final target of the research project is to train young researchers in understanding the modelling of Solid Mechanics problems applied to the process and design of advanced ceramics in a synergic collaboration between academia and industry. The expertise of the research group is in Solid Mechanics, in particular in the field of non-linear theories of mechanics and computational modelling with emphasis on: large strain deformations, nonlinear finite element method and programming, plasticity and constitutive modelling, bifurcation and material instabilities.

Beside the University of Trento, the network involves four Academic Institutions (the Rzeszow University of Technology specialized in Computational and Experimental Mechanics and Processing; the University of Liverpool specialized in Applied Mathematics; the Aberystwyth University specialized in Mathematical Modelling; the University of Belgrade specialized in the application of Inverse Analysis theory to material characterization) and three Technology and Production Units (CEREL, a productive unit of an applied research institute, specialized in developing ceramic materials and manufacture technologies; ENGINSOFT, a SME operating in the field of Computer-Aided- Engineering and Virtual Prototyping; VESUVIUS, manufacturer of ceramics, refractory products and flow control systems).

Benefits

The PhD candidate will be employed on a 3 year contract at a gross salary equivalent to €40508 per year supplemented by a monthly mobility allowance of €1066 (candidates with family responsibilities) or €746 (candidates without family responsibilities). The project includes a generous budget to support the research and career development.