UNIVERSITÀ DEGLI STUDI DI BRESCIA - FACOLTÀ DI INGEGNERIA
DIPARTIMENTO DI INGEGNERIA MECCANICA E INDUSTRIALE
Via Branze, 38 - 25123 BRESCIA
Codice Fiscale 98007650173 - Partita IVA 01773710171

2013/2014 CALL FOR APPLICATIONS

DOCTORAL SCHOOL IN ENGINEERING SCIENCE "Mechanical and Industrial Engineering"
University of Brescia

1 PhD Position in FP7 large-collaborative project.

In the framework of the FP7 large project ISTRESS (http://www.stm.uniroma3.it/iSTRESS), entitled "Pre-standardisation of incremental FIB micro-milling for intrinsic stress evaluation at the sub-micron scale", one PhD position is available in the Department of Mechanical and Industrial Engineering at the University of Brescia (Chem4Tech Lab).

The PhD project is entitled: Residual stresses in heterogeneous textured coatings by diffraction and Raman spectroscopy.

The project aims at developing innovative and automated procedures for the measurement of macro and micro stresses in thin films and coatings .

Starting date:
January 1st, 2014

Scholarship description:
The main concept of this project iSTRESS is to develop and promote pre-standardization of an innovative, highly reproducible and automated family of protocols for the measurement and analysis of residual stress at the sub-micron-scale, which affect the properties and lifetime of a wide range of micro/nanostructured and amorphous materials, thin films, MEMS devices and engineering coatings. Despite these urgent industry requirements, the assessment of the residual stress in sub- micron volumes is still an extremely challenging task, especially in the case of nano-crystalline, strongly textured, complex multiphase materials and thin films.

The methodology will be based on residual stress using conventional macro-scale methods, e.g. conventional XRD and by the analysis of the Debye and Raman spectroscopy. The results will be compared with those obtained by the incremental focused ion beam (FIB) micro-milling, combined with high-resolution in situ Scanning Electron Microscope (SEM) and analytical/numerical models for residual stress
calculation.

The main activities of the PhD student will be focused on the implementation of procedures for XRD and Raman spectroscopy measurements of stress on multi-layered thin films.

The student will be effectively introduced in the research/industry network of the project iSTRESS, which comprises high level academic, multi-national industry partners (Bosch, Thales, Tescan) and a large number of associated industry partners (including Rolls-Royce, EDF and GLOBALFOUNDRIES).

Eligible PhD candidates must preferably have a background in at least one of the following fields: materials science, physics, mechanical engineering, structural engineering, process engineering.

How to apply:
online application forms are available at: http://www.unibs.it/node/7592
deadline: 18/11/2013 at 13.00
for additional information: laura.depero@ing.unibs.it