

Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : Mazeran Given names : Pierre-Emmanuel

Status (prof., assistant prof., ...) : Assistant professor

Laboratory : Laboratoire Roberval, FRE CNRS-UTC 2012 Website address : roberval.utc.fr

Institution : Sorbonne universités, Université de Technologie de Compiègne Website address : www.utc.fr

Scientific competence of the supervisor:

Specialist in material science and micro and nano-mechanic, i developpe experimental devices to measure the tribological properties at the nanometer scale by means of Atomic Force Microscopy. Research works are concentrated on the influence of sliding velocity on adhesion, friction and wear. In particular, we describe the friction laws and their solid and viscous components, and the atom by atom wear mechanisms

Two major publications in the field proposed for the PhD :

1. Nasrallah, H., Mazeran, P.-E., Noël, O., Circular mode: A new AFM mode for investigating surface properties, Review Scientific Instruments, 82 (2011) 113703
2. Noel, O., Mazeran, P.-E., Nasrallah, H., Sliding velocity dependence of adhesion in a nanometer sized-contact, Physical Review Letters, 108 (2012) 015503

Website address of the personal page :

Supervisor's email : mazeran@utc.fr

Description of the research work proposed for a PhD **Topic # (see list) :** IV-1.Nanotechnolo

Title : Understanding friction elementary mechanisms at the nanoscale

Subject :

See text attached

Keywords :

Atomic Force Microscope, Circular mode, Nanotribology, Friction laws at the nanometer scale, Velocity dependence, Solid and viscous friction

Expected collaborations :

Olivier Noel, Université du Maine (France); Andras Vernes, Technische Universitat Wien (Austria)

Background required from the applicant :

The student should have an initial training in mechanics. Solid bases in mechanics of materials and/or in contact mechanics are appreciated. He should have affinities for the experimental research and a very good level in English (oral and written forms)

Existence of a PDF file detailing the proposal ("yes" or "no") : yes

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