

Proposition for a post-doctoral position

Hull University-Labex ACTION

1. Administrative information

The PhD position will be shared between the Laboratory of Nanotechnology and Instrumentation (LNIO) at the University of Technology of Troyes (UTT) and Hull University. The 1-year position is jointly provided by the Labex (Laboratory of Excellence) ACTION (<http://www.labex-action.fr/en>) and Hull University. You can get information from Thomas Maurer (thomas.maurer@utt.fr) and Jean-Sébastien Bouillard (J.Bouillard@hull.ac.uk).

2. Scientific description

The project aims to break through frontiers in nanoscience between mechanics and plasmonics by developing the emerging research field of plasmomechanics. The main idea consists in investigating plasmonic coupling phenomena in nanostructured materials subjected to mechanical stress. Nanogauges in the form of polymer nanocomposite architectures (plasmonic nanoparticles self-organized into polymer matrices and sub-wavelength plasmonic surface gratings) will be produced using integrative synthesis and nano-texturization routes such as nanoimprint lithography. The optical behavior of these gauges at the nanoscale level under tensile load in-situ in optical, atomic force and electron microscopes will be analyzed and simulated.

Therefore, the applicant will have the opportunity to investigate fundamental questions about nano-optics (plasmonic coupling) and mechanics (development of optical tools to characterize mechanical properties at sub-micrometer scales, nanoparticle deformation,...) but he will also meet the challenge of the development of a new optical strain sensor generation. The recruited researcher will benefit from the facilities provided by the Nanomat' technological plat-form at the UTT and of nano-imprint lithography at Hull university.

3. Profile

We are looking for a confirmed researcher with expertise in nanofabrication, especially in nanoimprint lithography. The major objective remains the development of colour-changing stretchable materials.