Near-field laser ablation for surface elemental chemical analysis: modelling and experiment

Ablation laser en champ proche pour l'analyse chimique à l'échelle nanométrique : modélisation & expérience

Description

We have an immediate opening for a postdoctoral researcher in the greater Paris area, France (location CEA Saclay 25 km SW of Paris downtown). The postdoc will join a research effort of the Commissariat à l'Energie Atomique (CEA) aiming at the development of a near-field laser ablation technique for the elemental chemical analysis at nanometer resolution of different solid samples. The technique is based on the coupling of a pulsed laser light with the tip of an atomic force microscope (AFM) to achieve local ablation of the target substrate. The ablated material is then analysed by a mass spectrometer (ICPMS). Optimization of the physical parameters (laser fluence, wavelength & polarisation, tip-to-sample junction geometry, etc) will be investigated by numerical electromagnetic simulation, as well as parallel analytical developments in collaboration with theoreticians and later on experimentally validated.

Profile of applicant

Applicants must have earned a doctoral degree in physics or chemical physics **within the past two years**, with a proven capacity for world-class research in nano-optics or related fields. Experience in electromagnetic simulation (FDTD, DDA, BEM) and near field microscopies (AFM) is strongly preferred, but not required.

Duration

The initial appointment is for one year, but may be extendable for one additional year based on available funding. Position is available immediately. Net monthly salary including state health benefits is 2200 €.

Research labs involved

- Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA DPC), *Service d'Etudes analytiques et de Réactivité des Surfaces SEARS*, Univ. Paris Saclay F-91191 Gif sur Yvette,

- Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA IRAMIS), *Service de Physique de l'Etat Condensé SPEC*, CNRS, Univ. Paris Saclay F-91191 Gif sur Yvette /iramis.cea.fr/

Contact

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