DIelectric coating for Electron EMmission - DIEEM

Emission d'électrons par effet de champ, intérêt de revêtements diélectriques

Description

We have an immediate opening for a postdoctoral researcher in the greater Paris area, France (location Univ. Paris-Saclay, 25 km SW of Paris downtown). The postdoc will join a research effort of the Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA) aiming at the study of electron emitting materials.

The goal of the proposed research is to investigate, analyse and understand the physics and performances of field emission materials under extreme high electric field (static & dynamic field regimes). In this context, the use of dielectric coatings, low dimension materials as well as smart surface nanostructuring to enhance local optical field opens up new practical research directions. Beyond electronic emission from conducting materials, the phenomenon of optical breakdown in dielectric media is a natural extension of the proposed research theme.

The physics of such extreme electron emitters will be investigated under real operating conditions via the use of an adapted surface technique, namely the *photoemission electron microscopy* (PEEM) / *low energy electron microscopy* (LEEM). PEEM working principle allows the electrons emitted by a sample to be spatially imaged at the mesoscopic level. PEEM microscopy is a multidimensional surface technique. The proposed research work will be carried out at multiple scales: spatial (nm), spectral (meV) and temporal (fs) scales. PEEM exploits *ultra-short pulsed lasers* (USPL) as dynamic field excitation sources.

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, high field physics, laser optics or related fields. Experience in electron microscopies (SEM, TEM, PEEM, LEEM) and ultra-short pulsed lasers is much welcome, but not required.

Duration

The appointment is for one year (12 months) extendable for two additional years (12 + 24 months) based on available funding. Position is available immediately. Net monthly salary including state health benefits is the range 2600 - 3100 € (according to education and experience).

Research labs involved

Commissariat à l'Energie Atomique et aux Energies Alternatives CEA IRAMIS SPEC *Service de Physique de l'Etat Condensé,* Univ. Paris-Saclay, CEA, CNRS 3680 F-91191 Gif sur Yvette France /iramis.cea.fr/SPEC. Research group Lab. d'Electronique et de Photonique Organique (LEPO)

Contact

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