



DRF – Direction Recherche Fondamentale du CEA  
IRAMIS -INSTITUT RAYONNEMENT MATIERE SACLAY  
UMR 3685 NIMBE : Nanosciences et Innovation pour les Matériaux, la Biomédecine et l'Énergie



**LICSEN offers a post-doc position (12 months) in the field of carbon nanotube optoelectronics/photronics.**

**Contact : Arianna Filoramo ([arianna.filoramo@cea.fr](mailto:arianna.filoramo@cea.fr); +33169088635)**

### **Description of the project**

The aim of this project is the hybridization of different concepts and materials for new opto-electro-mechanical nano-devices. Thanks to their outstanding electrical, mechanical and chemical characteristics, carbon nanotubes have been demonstrated to be very promising building blocks for future nanoelectronic technologies. In addition, recently their optical properties have attracted more attention because of their typical fundamental optical transition in the NIR [1-2] in a frequency range of interest for the telecommunications. The idea is to combine their particular optical features, inferred by their one-dimensional character, with their assessed exceptional transport and mechanics characteristics for hybrid optoelectronics/optomechanics application [3-5]. We will extract semiconducting nanotubes from the pristine mixture by a method based on selective polymer wrapping [6-14]. We will study the mechanism involved in the electroluminescence and photoconductivity: both the carrier injection and radiative recombination are to be taken into account. Then, hybrid opto-mechanical integrated devices will be considered.

This work will be performed at LICSEN (Laboratoire d'Innovation en Chimie des Surfaces et Nanosciences) in CEA Saclay in strong collaboration with LCO (Laboratoire des Capteurs Optiques et Nanophotonique) in CEA-LETI Grenoble. LICSEN (CEA-DRF) has a long experience in carbon nanotubes manipulation and devices [13-18]. LCO (CEA-DRT) is well established in the field of electromechanics and more recently in optomechanics.

### **References**

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