

# Postdoc position available

## Xlim Research Institute – Photonic Department

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« UV/mid-IR fibre lasers: nano-hybridisation of photonics and semiconductor technologies »

Keywords : laser source, optical fibers fabrication, photonic bandgap mechanism, nanoparticles, semiconductor technologies

The aim of this proposal is to study original composite fibres in order to develop tuneable laser sources emitting at new wavelengths (especially for the unconventional UV-visible and mid-IR ranges) for applications in information storage, remote sensing of molecules in military and environmental domains, processing of medical diagnostics and therapeutics.

For this purpose, the optical gain media of these fibres will be composed of the exciting semiconductor nanomaterials. These particules present the strong advantage of easily tuned emission wavelengths in a wide range through changes in their dimensions due to the quantum confinement effect. They also possess narrow emission lines combined with broad excitation wavelengths, which make them suitable to reach multiple emission wavelengths by starting from the same pump wavelength. Finally, the ability of the photonic crystal technology to simultaneously tailor the core material (dopant) and the optical properties of the fibre (through the microstructured cladding) gives an unique opportunity to study optically-pumped QD laser systems. This project will require expertise in photonics and chemistry. A background based on the synthesis and application of nanoparticles will be preferred.

**Profile required** : PhD in chemistry and/or photonics

**Skills covered** : optical fiber, semiconductor technologies, nanoparticles

**Duration** : 18 months

**Starting date** : march / mai 2010

**Place** : Xlim Research Institute – Photonic Department (UMR CNRS n°6172, Limoges, [www.xlim.fr](http://www.xlim.fr))

**Nature of funding** : ANR funding

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