

PhD open position at CORIA/GPM

High performances mid-IR and THz ultrafast laser sources

This work forms a central component of a collaborative project between the Groupe de Physique des Matériaux (GPM), the Institut de Recherche en Systèmes Electroniques Embarqués (IRSEEM) and the Complexe de Recherche Interdisciplinaire en Aerothermochimie (CORIA). This project which is funded by the région Haute Normandie aims to explore the impact of ultrafast THz electromagnetic waves in different areas related to material analysis by atom probe tomography and electromagnetic compatibility of electronic devices.

The successful candidate will be involved in the development of high-energy ultrafast sources emitting in the mid-IR and THz regions. Our objective is to develop ultrafast THz sources with performances qualified for a large variety of scientific and industrial applications, notably, in materials analysis and metrology. The first approach that will be pursued will focus on THz transients' emission through optical rectification in nonlinear crystals or by air ionisation using a high-energy ultrafast laser system operating in the near infrared region. The second approach will concern the development of high-energy ultrafast sources emitting in the mid-infrared around 1.9 μm which will be used to pump nonlinear crystals to build highly integrated ultrafast THz sources. Different laser platforms combining thulium- and/or holmium-doped fibres and bulk crystals will be explored.

The ideal candidate has a master's degree or equivalent diploma (eg engineering) in optics, physics or related disciplines and a keen interest in academic research. Any experience (projects, training periods, etc...) in the field of instrumental optics, lasers or nonlinear optics would be appreciated. The candidate will be supervised by specialists in scientific instrumentation, laser physics, nonlinear optics and light-matter interaction. For further information, please contact:

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