

# Open PhD positions at the Materials and Light Department

## Physics Institute of Rennes, Univ. Rennes 1, France

starting Autumn 2017



**Femtosecond optical spectroscopy**  
**Ultrafast X-ray diffraction**  
**Femtosecond X-ray spectroscopy**  
*For probing*  
**Photoinduced phase transitions**



***Prof. Eric Collet, Dr Marco Cammarata, Dr Maciej Lorenc***

Dear Colleagues,

We have **two 3-year PhD fellowships available at the Physics Institute of University Rennes 1, France**. The research activity of the hosting group, Materials and Light Department, is focused on *photoinduced phase transitions and their multiscale dynamics in molecular materials* of which functionalities (magnetic susceptibility, electric conductivity, both) are controllable by external stimuli, such as light, electric and elastic fields. We investigate photoswitching mechanisms by using the following femtosecond techniques:

- # X-ray scattering and X-ray diffraction (at synchrotrons and XFELs)
- # X-ray absorption (at XFELs)
- # Ultrafast UV/VIS/IR spectroscopy (in house lab)

Successful candidates will work in the ultrafast spectroscopy laboratory and participate in experimental campaigns on large facilities around the world. The group is currently setting out on two major projects, one funded by the National Research Agency and the other operated within France-Japan International Laboratory, which the thesis will be directly connected to. The former aims at controlling the photoinduced elastic cooperativity in bi-stable volume-changing materials, and will provide with opportunities to learn techniques other than those developed in Rennes, such as shock waves and pulsed electric fields. The latter aims at exploring new materials with various ultrafast techniques and will involve the University of Tokyo. Our team is young and dynamic, with a third being foreign English is the working language. The scholarships include full social security coverage and competitive salaries. Students have no teaching obligations. The University offers French courses for foreigners and hosts an international Erasmus Mundus program. Students should obtain their PhD degree within the 3 years of the financial support (before Oct 2020).

Rennes is a medium size French city less two 2 hours away from Paris, offering a relaxing life style with many cultural and sport activities.

Requirements:

- # M.Sc. degree in physics
  - # Good understanding of Physics / material science
  - # Good experimental skills
  - # Good team player
  - # Be ready to start in October/November 2017 time frame
- Prior hands-on experience with diffraction and/or laser spectroscopy will be a strong asset*

Selected recent Publications of the group (hyperlink):

- # **Nature Communication** DOI: [10.1038/ncomms15342](https://doi.org/10.1038/ncomms15342) (2017)
- # **Nature Materials** [15, 606](#) (2016)
- # **Accounts of Chemical Research** [48, 774-781](#) (2015)
- # **Phys. Rev. Lett.** [113, 227402](#) (2014)
- # **Nature Photonics** [7, 215](#) (2013)

Interested candidates are encouraged to contact:

Prof. Eric Collet ([eric.collet@univ-rennes1.fr](mailto:eric.collet@univ-rennes1.fr))  
Dr Marco Cammarata ([marco.cammarata@univ-rennes1.fr](mailto:marco.cammarata@univ-rennes1.fr))  
Dr Maciej Lorenc ([maciej.lorenc@univ-rennes1.fr](mailto:maciej.lorenc@univ-rennes1.fr))

Further information: visit our web site <https://ipr.univ-rennes1.fr/d7?mtop=dpt7&lang=en>