

PhD position: Laser spectroscopy on next generation multiferroics

3 years, at IMMM - Institut des Molécules et Matériaux du Mans, Le Mans Université, France

In the **NOVA group at the IMMM**, Le Mans Université, we are seeking a candidate for a PhD position in laser spectroscopy to investigate the coupling of ferroic properties. The NOVA group is expert in **Raman and ultrafast laser spectroscopy** on highly correlated materials, in particular on **multiferroic systems** (materials with combined magnetic, ferroelectric or elastic properties).

Project background

The research on multiferroic materials aims to use the coupling of electric and magnetic properties for high performance computing. With this project, we target the **next-generation multiferroics** with three or more (instead of only two) ferroic properties. These materials promise high flexibility for future applications. We will study two intriguing systems: the $ReFeO_3$ family (*Re*: rare earth), with two simultaneous magnetic and one electric property and the $BaMF_4$ family (*M*: magnetic transition metal) with coexisting magnetic, ferroelectric and elastic properties. Using **Raman scattering and nonlinear optics**, the PhD candidate will gain an in-depth understanding of the intrinsic physics, coupling pathways and the ferroic domain structures of these next-generation multiferroics.

Job description

This position offers to learn about and work with our **cutting-edge Raman spectroscopy** and **ultrashort-lasertechniques**. You will apply these techniques to develop new experimental approaches and physical concepts in the field of (multi-) ferroic materials. An **international research environment** offers ample of networking and training possibilities. We attach great importance to your training in written and oral presentations, which is indispensable in research and in industry environments.

Your profile

You hold a Master's degree in Physics or Material Science. A good understanding of condensed-matter physics is desired and a background in experimental laser or Raman spectroscopy is a plus. You are a team player who likes to work in an interdisciplinary environment at the interface between optics and condensed-matter physics. You are organized, creative and enjoy to thinking sideways. Knowledge or interest in programming in Python would be beneficial. Fluency in English is important. We can support with administrative tasks in French. If you feel a fascination to reveal secrets of materials by light and if you like to understand complex phenomena at their roots, you should definitely apply.

Interested?

We look forward to receiving your application via email (mads.weber@univ-lemans.fr) with a letter of motivation, detailed CV and diplomas.

For **further information** about the position, the project, the laboratory, etc. please contact Mads WEBER, visit our website [Couplage spin-electron-phonon-photon-structure - IMMM \(univ-lemans.fr\)](http://Couplage spin-electron-phonon-photon-structure - IMMM (univ-lemans.fr)) and check out Mads' recent publications [Mads C. Weber - Google Scholar](https://scholar.google.com/citations?user=MadsC.Weber).

Starting date: October 2023. Application Deadline: 19.04.2023.

