

PhD in Material Discovery and Characterization.

The Laboratory for Quantum Magnetism ([LQM](#)) is looking for a motivated candidate who wishes to perform his/her Ph.D. in a stimulating and dynamic atmosphere at the forefront of scientific research in magnetism and solid-state physics in general. LQM is part of the Swiss Federal Institute of Technology in Lausanne (EPFL), a world-renowned science and education center, offering prospective students an ideal environment to start their scientific carrier as well as an excellent connection with industry.

Project Description: The discovery of new materials, or innovative uses of existing materials, is essential to making progress in many of the scientific and technological challenges we face. Synthesis and processing are focused primarily on the chemical and physical means by which atoms and molecules are combined to produce materials. Advances in synthesis yield new materials having new properties such as skyrmions, magnetic insulators, and superconductors. These advances may also be used to enhance the properties of known materials. The control of the structure and composition is crucial since the properties of these materials depend significantly on impurities and the quality of crystals or powders. The goal is to understand experimental design and become versed in different instruments and techniques used for the synthesis and characterization of new materials.

With this project you will gain expertise in:

- Various synthesis methods (solid-state, flux, CVT, laser floating zone, high-pressure high-temperature synthesis, etc.)
- Design of new experimental methods
- Structural characterization methods (X-ray, SEM, TEM and EDX)
- Magnetization and transport measurements (Susceptibility, Resistivity, PPMS, etc.)

The successful candidate is expected to hold a master's degree in physics or equivalent. In addition, the following qualifications are desired:

- Hands-on approach to experimental work
- Ability to work independently but also as a part of a team
- Data analysis (Origin, Matlab, python, etc.)
- Programming fundamentals (MATLAB, Python, Labview, etc.) (Optional)

The selected PhD student will need to enroll in the Physics program of the EPFL doctoral school. After one year of successful probation, the initial contract will be extended up to a total of four years. Doctoral school information and employment conditions at EPFL are described at:

- <https://www.epfl.ch/education/phd/programs/edpy-physics>
- <https://www.epfl.ch/education/phd/doctoral-studies-structure/doctoral-students-salary>
- <https://www.epfl.ch/about/working/working-at-epfl/employment-conditions>

Starting date: As soon as possible.

For inquiries and applications, please contact us at lqm.jobs@epfl.ch. Applications should include CV, grade transcript and names of 3 persons who can be contacted for reference letters.