

## **Post-doctoral position : Spectroscopic study of magnetic chalcogenides**

The search for thermoelectric materials is an active topic, and promising new families such as chalcogenides have emerged in recent years with the figure of merit  $ZT$  reaching 1 or above. One of the possible tuning parameters of  $ZT$  in chalcogenides containing transition-metal cations is magnetism which can modify the transport parameters through a modification of the band structure and/or a modification of the entropy of the material. The thermal conductivity can also potentially be modified by magnetism. Even if promising interplay between thermoelectric properties and magnetism has already been demonstrated in some oxides and sulfides, a detailed understanding of these phenomena is still lacking. The aim of our project is to investigate the interplay between carriers, spins and phonons in three selected families of chalcogenides, guided by the input from Density Functional Theory (DFT). This will subsequently allow the optimization of the thermoelectric properties of these materials. Beyond studies of the magnetic properties by standard SQUID magnetometry, the magnetism can be investigated at the local scale in iron-based compounds by Mössbauer spectroscopy, a powerful technique to probe oxidation state, spin configuration or magnetic moment direction at a given iron crystallographic site.

Post-doctoral position (starting from January 2024)

The recruited researcher will participate in the implementation and interpretation of Mössbauer spectroscopy results in iron chalcogenides. Candidates must have a Ph.D in Physics, Material Science, Chemistry, or a closely related field. A strong experience in material characterization is required, in particular in Mössbauer spectroscopy. He/she should be autonomous to perform the Mössbauer analyses: preparation of the samples, adaptation of the Mössbauer devices for specific analyses, fitting of the spectra. The successful candidate will be highly motivated, with demonstrated abilities to work in a collaborative environment.

The duration of the post-doctoral fellowship is 6 months, starting January 2025. This post-doctoral fellowship is granted by the ANR ThermoDFT project.

Contact : Pr Jean Juraszek  
Groupe de Physique des Matériaux, 76801 SAINT ETIENNE DU ROUVRAY CEDEX  
FRANCE

E-mail: [jean.juraszek@univ-rouen.fr](mailto:jean.juraszek@univ-rouen.fr)