**Development of a compensated microcalorimeter to measure phase transitions in high magnetic fields**

This project involves the development of a compensated microcalorimeter to measure phase transitions at low temperatures and high magnetic fields in order to establish their phase diagrams. The project will consist in designing the experiment, testing the measurements on standard materials and then performing real measurements on known crystals. Microcalorimetry is the calorimetry (the temperature change in a material as results of the applied heat) of microgram single crystals that are more challenging to study than big samples because the time scale for changing the temperature is much faster and the environment takes away a greater proportion of the heat involved. We are looking for a candidate to develop the experimental setup and the relevant software in order to control these experiments as function of temperatures (1.5-300K) and high magnetic fields (up to 21T). The required skills for this position are good knowledge of condensed matter physics, computing skills such as Matlab and/or Phyton and a good spoken and written English.

As a reference please look at:

Differential Scanning Calorimetry Techniques: Applications in Biology and Nanoscience J Biomol Tech. 2010 December; 21(4): 167–193.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2977967/>

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