

**Aquitaine –Karnataka collaboration
Scientific Project for Pre-PhD student exchange**

Scientific Proposal

Project Title	Microstructural properties of SCO polycrystalline materials	
Scientific domain	X-ray diffraction crystallography – Molecular magnetism	
Summary (ca. 10 lines)	Switchable molecular material as spin crossover (SCO) complexes are promising molecule-based systems that may lead to a large panel of potential applications including smart pigments, optical switches or memory devices. ^[1] Nevertheless, fundamental investigations on these materials are still needed as some aspects are still poorly understood or unknown. ^[1,2] Among them, the study of the mechanism of the SCO in crystalline powders might reveal the microstructural properties of these materials during the switch and highlight new aspects as fatigability. Moreover, the SCO crystalline powders behaviour is poorly known despite this form of materials is probably closer from applicative concern than the single-crystals on which most of the fundamental investigations on SCO were performed so far. ^[3] The aim of the project is to increase the knowledge on switchable powders giving rise to a multi scale description of the spin crossover.	
Student profile wished	Chemistry, Physical Chemistry, Materials Chemistry or Materials Physics	
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Timing & duration for project (give approximate ranges)	3 to 6 month	
Representative References	<p>[1] <i>Spin-Crossover Materials: Properties and Applications</i>, 2013, John Wiley&Sons</p> <p>[2] A. Bousseksou et al., <i>Chem. Soc. Rev.</i>, 2011, 40, 3313; P. Gütllich et al. <i>Beilstein J. Org. Chem.</i>, 2013, 9, 342</p> <p>[3] P. Guionneau, <i>Dalton Trans.</i>, 2014, 43, 382</p>	

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