



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

**Scientific Proposal**

Project Title	<b>Magnetic liquid-crystals</b>	
Scientific domain	Molecular Magnetism – Liquid-Crystal	
Summary (ca. 10 lines)	Some molecule-based materials based on transition metals, for example like $[\text{Fe}^{\text{II}}(\text{triazole})_3]_2\text{A}_2$ , could be used as potential systems to store an information at a molecular level or as molecular units in optical devices [1]. Prototypes using the dual properties of spin-crossover and thermochromism have been developed in the recent years. Nevertheless, these systems have never been used in industrial application. One of the major problems being the shaping of these magneto-optic materials, our team has oriented a part of its researches to elaborate new hybrids of these unique systems. Recently, we shown that it is possible to obtain gels and liquid-crystal phases that display these magneto-optic properties [2]. In the frame of this project, the research work of a MASTER student will be devoted the synthesis and characterization of a new family of spin-crossover liquid-crystal materials.	
Student profile wished	The project is adapted to all the students who have followed a Master degree in Chemistry.	
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Timing & duration for project (give approximate ranges)	3 to 9 month	
Representative References	[1] Kahn, O. et al. <i>J. Chem. Mater.</i> <b>2002</b> , 14, 2559 [2] <i>Angew. Chem. Int. Ed.</i> , (2004), <b>43</b> , 3283 ; <i>Langmuir</i> (2010), <b>26</b> (7), 5184 ; <i>Inorg. Chem.</i> (2012), <b>51</b> , 5417	

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