PROCESSING OF SPIN TRANSITION MOLECULAR MATERIALS USING SUPERCRITICAL FLUIDS

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ABSTRACT

The phenomenon of spin crossover in Fe(II) complexes has been subject to vigorous research activities in recent years and is of major concern either for fundamental investigation or potential industrial applications. These materials present a stable and reversible switch of physical properties in the solid state. They undergo a change of electronic ground state as a result of an external perturbation like pressure or temperature, for example. Some of these materials display abrupt transitions with large hysteresis loops centred at room temperature [1]. It confers a memory effect on the system thus possible applications in various fields such as temperature sensors, active elements of various types of displays, and information storage and retrieval devices [2, 3].

In this communication, we would like to present the studies performed on the design of Fe(II)-1,2,4-triazole compounds using supercritical fluids in order to obtain materials with tuneable physical properties, especially optical properties, under external stimuli. Our research group works on the chemistry in supercritical media for the synthesis of multifunctional nanostructured materials via control of surface or volume modification of materials with nanostructures [4].
In this context, the specific properties of supercritical fluids are used to prepare advanced nanostructured materials of spin crossover materials. The influence of the process parameters (p, T, fluid nature …) on the material characteristics (size, morphology …) but also on its physico-chemical properties will be discussed.

References

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