



Institute Colloquium

S. N. Bose National Centre for Basic Sciences
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4.00 PM



Silver Jubilee
Hall



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MULTIFUNCTIONAL SWITCHABLE MOLECULES IN POLYMERS

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The synthesis of multifunctional materials is generally considered as an important step from basic research to more application-oriented research.[1] One way to realize it are iron(II) spin crossover (SCO) complexes, whose spin state ($S = 0$ or $S = 2$) can be switched by a wide range of physical or chemical stimuli.[2] Structural and electronic changes associated with this transition can be exploited for applications e.g. in the field of sensors. In order to realise applications of such switchable molecules, it is important to synthesise nanostructures that can be integrated into composite materials, for example by the utilization of diblock copolymer (dBCP) micelles.[3-5]

To allow for a better readout, the combination of spin state switching with switchable luminescence is desirable. Here we will show two different possibilities based on iron(II) SCO complexes[6] and nickel(II) complexes showing coordination induced spin state switching (CISSS).[7] We will discuss which preconditions need to be fulfilled, to observe luminescence for open-shell 3d metal centers[8] and how the different sensing units can be integrated in self-assembled dBCP micelles.[9]

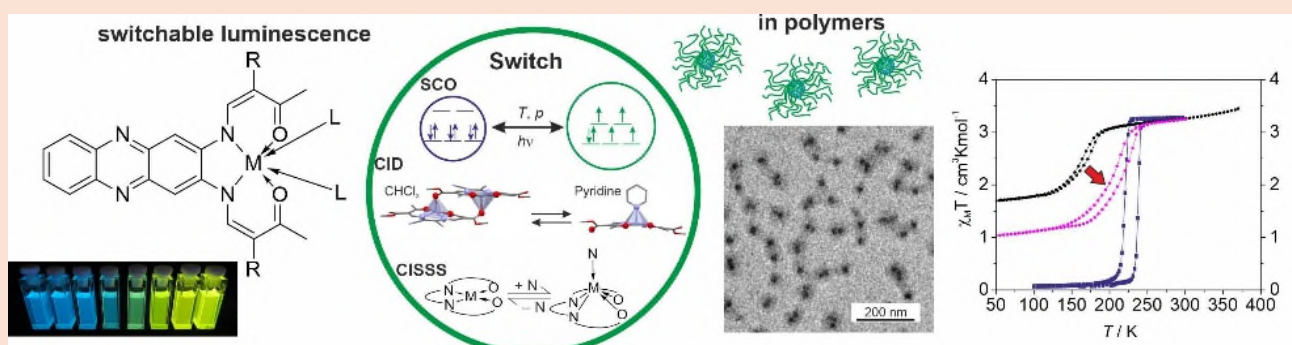


Figure 1. Different strategies to realize switchable molecules (center), their integration into polymers (right) and strategies to combine spin state switching with luminescence (left).

References

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Prof. Birgit Weber is a Professor at the Faculty of Biology, Chemistry & Earth Sciences, Chair of Anorganic Chemistry II at the University of Bayreuth. She obtained her PhD in Chemistry from Friedrich-Schiller Universität Jena, Germany in the year of 2002 and Habilitation in Inorganic Chemistry at Ludwig-Maximilian-Universität München, Germany in 2009. Her research area includes spin-crossover complexes, amphiphilic complexes focusing on coordination chemistry and ligand designing.

