

MaMaSELF



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Ultrafast photo-switching in dielectric materials with spin cross over

It has been admitted that classical phase transition in materials can be driven by external parameters such as changes in temperature and pressure. More recently light has been used to drive phase transitions faster (because of the use of short light pulses) and especially differently since femtosecond pulses could couple to electronic degrees of freedom before the system can move.

The main goal of the master thesis work is to study the ultrafast switching of spin transition materials. These compounds are prototypes of bistable molecular systems with two electronic states called High Spin (HS) and Low Spin (LS). This change of electronic states is accompanied by structural changes mainly around the central metal ion. We were particularly interested in two classes of Fe-based molecular systems: FeII (LS \rightarrow S = 0, HS \rightarrow S = 2) and Fe III (LS \rightarrow S = 1/2, HS \rightarrow S = 5/2).

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