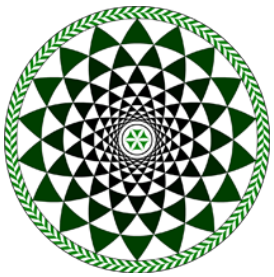

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Strategies towards cyanide-based multifunctional molecular materials

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One of the huge advantages of molecule-based magnets over the conventional magnetic solids is their "structural plasticity"–the ability to undergo structural and magnetic changes/transitions on slight modifications by using appropriate stimuli: temperature, pressure, guest molecules, electromagnetic radiation and so on.
In case of cyanide-based magnetic solids the removal/uptake of guest molecules can lead to the reversible formation/cleavage of molecular CN-bridges and the concomitant changes in their magnetic behavior. Moreover, if spin-crossover-capable ions are involved, Light-Induced Excited Spin State Trapping and the related photomagnetic effects can be expected. Additionally, pressurizing the spin-crossover capable compound influences the spin transition.
Following the above outlined strategies we have successfully engineered and characterized several coordination frameworks showing solvent/ligand-induced structural changes followed by significant switching of their magnetic ordering temperature T_c [1-3]. We have also managed to observe very interesting magnetic and photomagnetic properties of cyanide-based magnetic solids in response to pressure [4,5]. The most interesting one is the pressure-induced photomagnetic effect in {[Fe^{II}(pyrazole)₄]₂[Nb<sup>IV</s recorded for the first time ever [5].

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