

# HiPerMagnet

## High Performance 2D Conductive Magnets through Redox Active Coordination Chemistry

48 months

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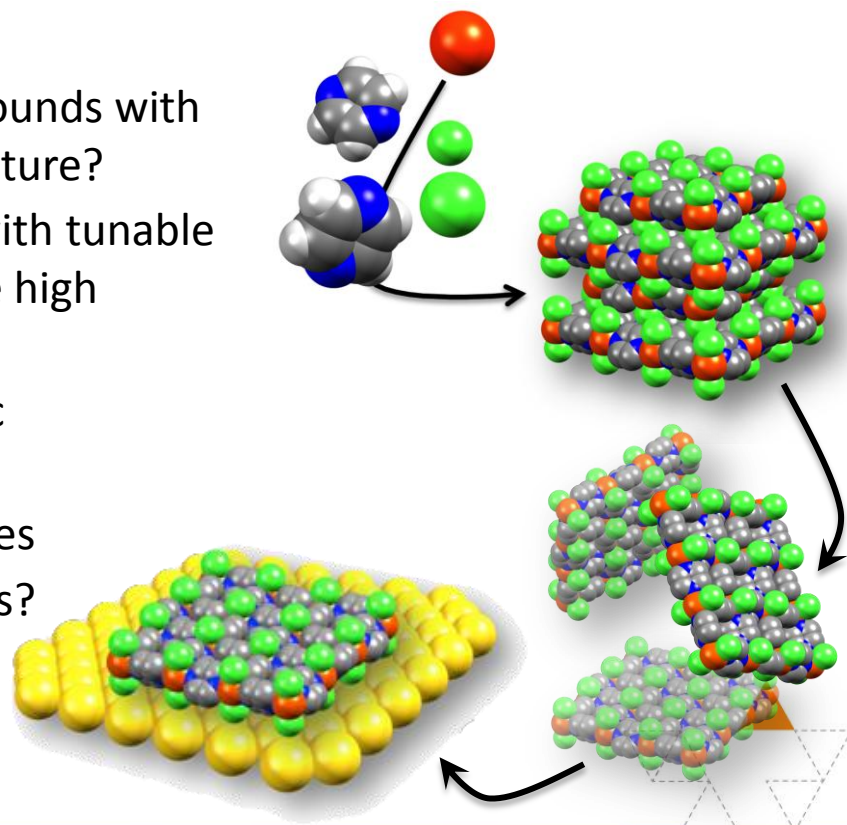
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## Design of novel magnetically ordered and conductive 2D molecule-based materials with tunable properties from the bulk to the single layer.

### Questions:

- a) How can we synthesize molecule-based compounds with magnetically ordered phases around room temperature?
- b) How can we design molecule-based systems with tunable band gaps and carrier densities in order to promote high electrical conductivity?
- c) How can we prepare molecule-based magnetic semiconductors that work at room temperature?
- d) Can we make molecule-based spintronic devices showing exotic states of matter at low temperatures?
- e) Can we make molecule-based spintronic devices working at room temperature?



This project was submitted to the ANR in 2019 & 2020:

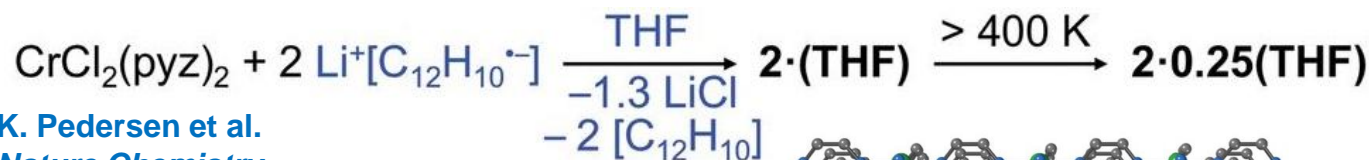
Even without ANR funding, we answered already to question (a).

**Yes**, it is possible to make a molecule-based magnet at RT:

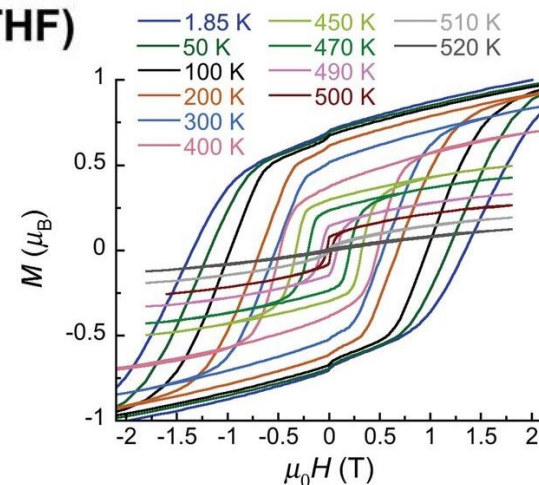
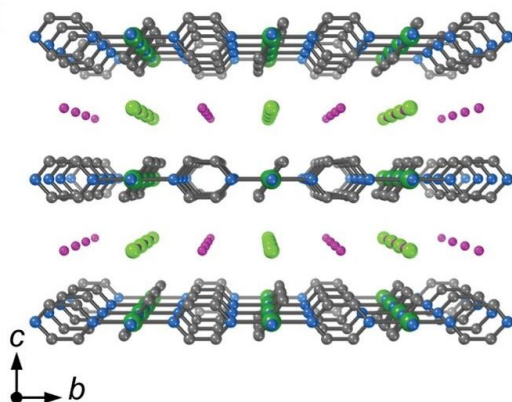
## Metal-organic magnets with large coercivity and ordering temperatures up to 242°C

Science  
AAAS

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K. Pedersen et al.  
*Nature Chemistry*  
2018;10:1056-1061



P. Perlepe et al. *Science* 2020;370:587-592