

日本物理学会九州支部 特別講演会

Nanoporous Organic-Inorganic Hybrid Magnets

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ABSTRACT

Making magnets from pre-designed molecular units has been the challenge of many chemists and physicists over the last twenty years. Several emerging breakthroughs have enhanced our hopes and have also confirmed some of our beliefs and concepts in this quest for lightweight, colourful and stable magnets. A key issue was the concept of distance. Using the latter, we have been able to synthesize coordination complexes, metal-organic, or purely organic magnets where some have Curie temperatures above room temperature and magnetic hardness ranging from a few Oersted to well above 20 kilo Oersted. In addition, I will show an example where we have coercivity in excess of 50kOe for an unusual metamagnet as well as for some of its analogues.

A further challenge for me was not only to design a magnet but to add functionalities to it. Our hope is to make magnets with pores where the magnetic properties can be tunable by the content of the pores. In this talk, I will give an outline of our approaches, some of our failures and most certainly, our successes.

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