

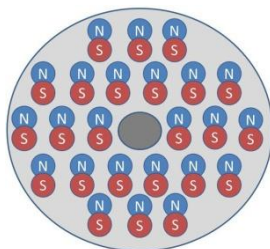
Computer hard drives made with single-molecule magnets promise very high information density

**Outcome:
Impact/
benefits:**

A team of scientists from Xavier University of Louisiana has developed new approach to synthesis of novel molecular magnets. The target substances are very small but strong magnets, and once obtained, they can be used for making compact memory devices with high capacity.

**Background/
explanation:**

Density of magnetic recording depends on the size of individual storage units. These units can be grains, microcrystals, nanoparticles or magnetic molecules; the smaller the size, the higher the density of recording. Xavier chemists are synthesizing molecules whose structure is similar to the atomic arrangement found in well-known bulk magnetic materials. This original approach increases the likelihood of observing properties of strong magnets.



Detailed studies in this area would help to better understand the relationship between molecular structure and magnetism, and therefore will help to rationalize the development of advanced materials. Other areas benefitting from this work include biology and medicine, where molecular magnets can be used as cell labels and MRI contrast agents.

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High-density
computer hard drive
made of molecular magnets
Graphic by V. Kolesnichenko