Research paper on magnetic control makes the top 10

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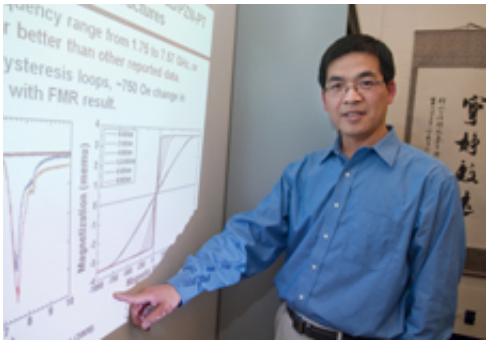

A study of the electric field control of magnetism was named one of the top 10 papers of the past decade by Advanced Functional Materials Photo by Lauren McFalls

A study of the electric field control of magnetism led by a Northeastern engineering professor was named one of the top 10 papers of the past decade by the prestigious journal *Advanced Functional Materials*.

Professor of electrical and computer engineering Nian Sun and his team reported on their effort to solve the need for greater energy efficiency in controlling magnetic properties, in applications such as motors; generators; disk drives; inductors; and transformers in cars, computers and cell phones.

The conventional approach has been through fields generated by electromagnets, which require large amounts of current, are bulky, and

severely limit the applications of magnetic materials. Sun and his colleagues pursued a newer method known as electric field control, which is potentially more space and energy efficient.

As part of this research, Sun began investigating a new group of composite materials, known as multiferroic composites, five years ago. A strong, effective magnetic field was produced by an electric field in a layered multiferroic composite, which used a negligible amount of energy. In sharp contrast, conventional electromagnets typically need hundreds of watts of power consumption to generate such a magnetic field, Sun said.

"The effective electric field control of magnetism in magnetic layered structures has significant technological implications," said Sun. "The compact and nearly passive electric magnetic control of magnetism could lead to more compact wireless communication systems and radar systems with significantly reduced power consumption and longer battery life. It may also lead to new magnetic random access memory devices and other novel spintronic devices. The effective electric field control of magnetism may dramatically change our lifestyle."

More information: Paper online: onlinelibrary.wiley.com/doi/10 … m.200801907/abstract

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