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Electronics

Reports on applied physics findings from M.H. Phan and co-researchers provide new insights

2009 FEB 18 - (VerticalNews.com) -- According to recent research from the United States, "Long-range ferromagnetism and low-field giant magnetocaloric effect are observed in Eu8Ga16Ge30 with the type VIII clathrate crystal structure, a material that is better known for its thermoelectric properties."

"Magnetization and modified Arrott plots indicate that the system undergoes a second-order ferromagnetic-paramagnetic phase transition at similar to 13 K. The low-field giant magnetic entropy change (-Delta S-M similar to 11.4 J/kg K for Delta mu H-0=3 T) coupled with the absence of thermal hysteresis and field hysteresis makes the system very attractive for low temperature magnetic refrigeration," wrote M.H. Phan and colleagues.

The researchers concluded: "The giant magnetic entropy change originates from the large magnetization (7.97 mu(B) per Eu ion) and the sharp change with temperature at the paramagnetic-ferromagnetic transition."

Phan and colleagues published their study in *Applied Physics Letters* (Long-range ferromagnetism and giant magnetocaloric effect in type VIII Eu8Ga16Ge30 clathrates. *Applied Physics Letters*, 2008;93(25):52505).

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Publisher contact information for the journal *Applied Physics Letters* is: American Institute Physics, Circulation & Fulfillment Division, 2 Huntington Quadrangle, Ste. 1 N O 1, Melville, NY 11747-4501, USA.

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