

Abstract Submitted  
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**Avalanches in Mn<sub>12</sub>-Acetate: “Magnetic Burning”** SEAN MCHUGH, Y. SUZUKI, D. GRAYBILL, M.P. SARACHIK, Department of Physics, City College of New York/CUNY, New York, New York, N. AVRAHAM, Y. MYASOEDOV, H. SHTRIKMAN, E. ZELDOV, Department of Condensed Matter, Weizmann Institute of Science, Rehovot, Israel, R. BAGAI, N.E. CHAKOV, G. CHRISTOU, Department of Chemistry, University of Florida, Gainesville, FL — From local time-resolved measurements of fast reversal of the magnetization in single crystals of the molecular magnet Mn<sub>12</sub>-acetate, we have shown[1] that the magnetization avalanche spreads as a narrow interface that propagates through the crystal at a constant velocity roughly two orders of magnitude smaller than the speed of sound. This phenomenon is closely analogous to the propagation of a flame front (deflagration) through a flammable chemical substance. The propagation speed of the avalanche depends on the energy stored in each molecule, which can be controlled and tuned using an external magnetic field. We report studies of propagation speed with different external fields in Mn<sub>12</sub>-acetate.

[1] Yoko Suzuki, M.P. Sarachik, E.M. Chudnovsky, S. McHugh, R. Gonzalez-Rubio, N. Avraham, Y. Myasoedov, H. Shtrikman, E. Zeldov, N.E. Chakov and G. Christou, Phys. Rev. Lett. 95, 147201 (2005).

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