

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Organic Spin Valves with Characteristics of Inelastic Tunneling and Hopping Transport** MINN-TSONG LIN, KAI-SHIN LI, YIN-MING CHANG, SANTHANAM AGILAN, JHEN-YONG HONG, JUNG-CHI TAI, Dept. of Physics, National Taiwan University, WEN-CHUNG CHIANG, Dept. of Physics, Chinese Culture University, KEISUKE FUKUTANI, P.A. DOWBEN, Dept. of Physics and Astronomy, University of Nebraska — We report on the inelastic scattering characteristics of an organic-based spin valve with a thin organic barrier of 3,4,9,10-perylene-teracarboxylic dianhydride (PTCDA) dusted with alumina at organic/ferromagnetic interfaces. Spin injection with magnetoresistance up to 12% at room temperature was achieved. In the inelastic tunneling spectrum, the observation of characteristic vibrational loss peak of organic spacer provides direct evidence of the interplay between the spin-polarized electrons and the organic molecules. The spin-dependent transport mechanism can be further described with a model of combined tunneling and hopping processes as verified by experiments as a function of organic layer thickness.

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Date submitted: 16 Nov 2010

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