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Ferroelectric control of the spin polarization in an organic spin valve DALI SUN, Oak Ridge National Laboratory / The University of Tennessee, Knoxville, XIAOSHAN XU, Oak Ridge National Laboratory, LU JIANG, Oak Ridge National Laboratory / The University of Tennessee, Knoxville, HO NYUNG LEE, Oak Ridge National Laboratory, HANGWEN GUO, Oak Ridge National Laboratory / The University of Tennessee, Knoxville, PAUL C. SNIJDERS, T. ZAC WARD, Oak Ridge National Laboratory, ZHENG GAI, X.-G ZHANG, Oak Ridge National Laboratory / Center for Nanophase Materials Science, JIAN SHEN, Fudan University/ The University of Tennessee, Knoxville — Recently engineering the spin propagation in organic spin valves has shown increasingly interesting properties. In this work we demonstrate novel ferroelectric control of the spin polarization in an organic spin valve. By inserting a thin ferroelectric buffer layer between a bottom $La_{0.67}Sr_{0.33}MnO_3$(LSMO) electrode and the organic Alq_3 layer, a controlled spin polarization through the ferroelectric interface is achieved. The spin valve exhibits both positive and negative magnetoresistance depending on the applied bias. We conclude that this results from the energy level shift by the ferroelectric dipoles between Alq_3 and LSMO (Research sponsored by the Laboratory Directed Research and Development Program of Oak Ridge National Laboratory, managed by UT-Battelle, LLC, for the U. S. Department of Energy).

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