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A computational model of organic semiconductor spin valves ARMANDO BARRANON, Dept. of Basic Sciences, UAM-A, Mexico City, F. DE L. CASTILLO-ALVARADO, Dept.of Physics, ESFM-IPN, Mexico City — A computational model has been developed of a spin valve where a spin sandwich is formed by two ferromagnetic electrodes and an organic semiconductor in the middle of the sandwich. Monomers are randomly placed in the central region of the sandwich and a genetic algorithm simulates the random movement of the monomers until they reach a polymer linear chain, optimizing a screened Coulomb Potential in energy space. Afterwards, spontaneous magnetization is simulated by a genetic algorithm that optimizes an Ising Hamiltonian in energy space. This way a remarkable enhancement of about 4300% in magnetization is obtained when electrode spins are parallel compared to the magnetization of the antiparallel array. This is in qualitative agreement with a experimental study of pyrochlore oxide superconductor KOs_2O_6. A.B. acknowledges funding from CONACYT Project 58939.

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