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Ultralow field magnetization reversal of two-body Stoner particles system[1] FEI LI, XIAOFENG LU, RUJUN TANG, Z. Z. SUN, Soochow Univ
— Magnetic mechanism of nanoparticles has attracted explosive attention in the development of modern information industry. On the base of Landau-Lifshitz-Gilbert equation, we studied the magnetization reversal in a system of two Stoner particles with uniaxial anisotropies and static magnetic interaction. Using micromagnetic simulation, two typical geometrical configurations of perpendicular(PERP) and parallel(PARA) configuration where the diameter of each particle is 20nm are considered. We found that when the separation between two particles has 23nm in PERP configuration ultralow switching field strength, 17mT can be realized, which satisfies the zero-field condition in our previous works[J. Appl. Phys. 109, 104303(2011)] according to the chosen parameters of cobalt material. For other separation values the switching field are multiple of lowest field. However, in PARA configuration the switching field changes with the separation faintly. This two-body system considered in our work might be implement as a composite information bit and our results offer further possibilities for its applications in information storage and/or fast magnetic response.

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