Spin-dependent conductance of a typical fishbone-like nanostructure

M Mardaani¹,², H Rabani¹,² and S Soleimani¹

¹. Department of Physics, Faculty of Science, University of Shahrekord, Shahrekord, Iran
². Nanotechnology Research Center, Shahrekord University, 8818634141, Shahrekord, Iran
E-mail: mohammad-m@sci.sku.ac.ir

(Received 19 June 2011 ; in final form 25 February 2012)

Abstract
In this study, we investigated the spin dependent electronic transport of a fishbone-like nanostructure including two magnetic atoms at its ends. The electronic conductance of this nanostructure for three different orientations of atomic magnetic moments was numerically studied when the structure was sandwiched between two nonmagnetic leads. By using Green’s function technique at the tight-binding model, we calculated the spin dependent electronic transmission coefficient. The calculated results revealed that the conductance depends on the incident electron energy as well as the magnitude and orientation of atomic magnetic moments in the nanostructure.

Keywords: spintronics, fishbone-like nanostructure, Green’s function, tight-binding approach

For full article, refer to the Persian section