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Spin Resolved Electronic Behavior of Zno Nanoribbons

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Abstract : The aim of this study is to understand the spin-resolved properties of ZnO armchair and zigzag nanoribbons. The spin polarization can be induced by either geometry of the nanoribbons or ferromagnetic electrodes. Hence, spin-dependent behavior is revealed in these nanostructures in the absence of external magnetic field. Both electronic structure and magnetic properties of the nanoribbons are analyzed, employing first-principles calculations through Density Functional Theory. The relevant properties using the spin-dependent band structure, conductance, transmission, density of states and magnetic moment are elucidated. These results can be utilized to describe the nanoscale structures and stimulate the experimental works.

Keywords : first principles, spin polarized transport, ZnO device, ZnO nanoribbons
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