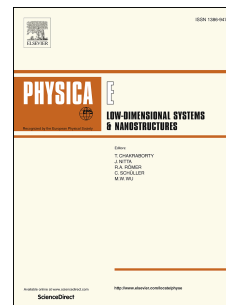


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Dynamic magneto-caloric effect of a multilayer nanographene: Dynamic Quantum Monte Carlo

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Abstract

Using the dynamic quantum Monte Carlo simulation, the dynamic magnetocaloric effect of a ferromagnetic multilayer nanographene (MNG) is studied within the dynamic Ising model under the applied of a time-dependent oscillating ($h(t)$) magnetic field. The influence of the amplitude h_0 and the period τ of the $h(t)$ and the transverse field Ω on the thermal behavior of the dynamic order parameter and the dynamic magnetocaloric properties (the dynamic isothermal $\Delta S_T(T, h(t))$ entropy change and the dynamic $\Delta T_{ad}(t)$ adiabatic change of temperature), the dynamic specific heat, the dynamic entropy and as well as the dynamic relative cooling power (RCP(t)) ferrimagnetic MNG are studied. Our predicted results may be a reference for future experiment and theoretical studies of the nanostructures.

Keywords: Quantum Monte Carlo; Multilayer nanographene; Magnetocaloric effect.

1. Introduction

In the recent years, the magnetocaloric effect (MCE) is an intrinsic and exciting property of magnetic systems, in which, MCE is defined as the warming of magnetic systems when they are subjected to a magnetic field change and cooling when the field is removed [1]. The MCE has gained an impressive importance both technologically and scientifically because of the

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