Peristaltic Transport of a Jeffrey Fluid with Double-Diffusive Convection in Nanofluids in the Presence of Inclined Magnetic Field

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Abstract : In this article, the effects of peristaltic transport with double-diffusive convection in nanofluids through an asymmetric channel with different waveforms is presented. Mathematical modelling for two-dimensional and two directional flows of a Jeffrey fluid model along with double-diffusive convection in nanofluids are given. Exact solutions are obtained for nanoparticle fraction field, concentration field, temperature field, stream functions, pressure gradient and pressure rise in terms of axial and transverse coordinates under the restrictions of long wavelength and low Reynolds number. With the help of computational and graphical results the effects of Brownian motion, thermophoresis, Dufour, Soret, and Grashof numbers (thermal, concentration, nanoparticles) on peristaltic flow patterns with double-diffusive convection are discussed.

Keywords : nanofluid particles, peristaltic flow, Jeffrey fluid, magnetic field, asymmetric channel, different waveforms
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