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Mixed Convective Heat and Mass Transfer Flow of Nanofluids in Concentric Annulus
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Abstract
This paper studies the non-Darcy natural convective heat transfer flow of nanofluid flow through a porous medium in a co-Axial cylindrical duct where the boundaries are maintained at constant temperature and concentration. The flow in the porous material is given by a linear Brinkman-Forchheimer-extended Darcy equation. The Boussinesq approximation is invoked so that the effect of density variation is combined to the buoyancy forces. The equations of momentum, energy and diffusion are coupled and linear. Galerkin finite element analysis is employed with quadratic polynomial approximations. At different axial positions, analysis is conducted for the behaviour of velocity, temperature and concentration. © 2015 The Authors.

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