

Documents

Chamkha, A.J., Doostanidezfuli, A., Izadpanahi, E., Ghalambaz, M.

Phase-change heat transfer of single/hybrid nanoparticles-enhanced phase-change materials over a heated horizontal cylinder confined in a square cavity (2017) *Advanced Powder Technology*, 28 (2), pp. 385-397. Cited 53 times.

Abstract

The melting process of a nano-enhanced phase-change material is investigated in a square cavity with a hot cylinder located in the middle of the cavity in the presence of both single and hybrid nanoparticles. The dimensionless partial differential equations are solved numerically using the Galerkin finite element method using a grid with 6000 quadrilateral elements. The effects of the volume fraction of nanoparticles, the Fourier number, the thermal conductivity parameter, and the viscosity parameters are studied. The results show that the solid-liquid interface and the liquid fraction are significantly affected by the volume fraction of nanoparticles and the thermal conductivity parameter. Additionally, it is found that the melting rate is much larger when the Fourier number changes between 0 and 0.5 and a further increase in the Fourier number causes a reduction in the rate of the melting. © 2016 The Society of Powder Technology Japan

2-s2.0-85006276989

Document Type: Article

Publication Stage: Final

Source: Scopus