Effect of size and location of solid on conjugate heat transfer in porous cavity

Abstract

The highlight of this article is the influence of a solid over heat transfer characteristics in a square porous cavity. The solid placed inside the porous medium is fraction of the whole domain whose size is varied at 5 different locations of the cavity such as left ($=0$), center ($=0.5$), right ($=1$), mid of left and center ($=0.25$), mid of center and right ($=0.75$) wall of cavity. The equations that govern the physical phenomenon have been simplified using popular numerical technique such as finite element method. These simultaneous equations are solved for the solution variables such as temperature and the stream function. The physical domain is divided into smaller segments with the help of triangular elements. The left and right vertical surfaces of cavity are maintained at hot and cold temperature $T_h$ and $T_c$ such that $T_h - T_c$. © 2018 National Institute of Science Communication and Information Resources (NISCAIR). All rights reserved.