

عنوان مقاله:

Capillary Effects on Surface Enhancement in a Non-Homogeneous Fibrous Porous Medium

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خلاصه مقاله:

The evaluation of a free fluid surface in a porous medium has several mathematical applications that are important in industries using molds, particularly in the fluid injection process. The vacuum-assisted resin transfer molding (VARTM) process is a promising technology in the primary composite industry. An accurate computational simulation of the VARTM process would be a cost-effective tool in the manufacturing of composites. In this paper, capillary effects were incorporated into an existing resin transfer molding model to simulate VARTM processing. To increase the accuracy of the VARTM process simulation, the effect of capillary pressure on a surface without flow was studied using the boundary element method. The simulation results were close to the experimental data reported by other researchers. It can be concluded that better reliability and accuracy could be achieved from theoretical predictions by examining the effects of capillary pressure on flow injection into porous materials.

کلمات کلیدی:

Vacuum-assisted resin transfer molding, Free surface, Capillary pressure, porous media, Finite element

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