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A Numerical Study on Micromechanical Aspects in Short Fiber Composites

Authors : I. Ioannou, I. M. Gitman

Abstract : This study focused on the contribution of micro-mechanical parameters on the macro-mechanical response of short fiber composites, namely polypropylene matrix reinforced by glass fibers. In the framework of this paper, an attention has been given to the glass fibers length, as micromechanical parameter influences the overall macroscopic material’s behavior. Three dimensional numerical models were developed and analyzed through the concept of a Representative Volume Element (RVE). Results of the RVE-based approach were compared with analytical Halpin-Tsai’s model.

Keywords : effective properties, homogenization, representative volume element, short fiber reinforced composites
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