On a numerical approach for better understanding the mechanical response of random composites

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Abstract

The talk is dedicated to a numerical study of the mechanical properties of random composites. The basic idea consists in conceiving a very stiff material from a one-phase medium, the matrix, which is reinforced by heterogeneities. These ones which are, for example, carbon or flax fibres are randomly spread within the matrix. In this presentation, we focus our study on a short fibre-reinforced polymer matrix composite. Purposes are as follows. First, we generate a numerical model of the material. Second, we assess mechanical properties from the numerical model. Finally, we investigate the impact of morphological or phenomenological parameters, as the length or the percolation of fibres, on the predicted mechanical properties.

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