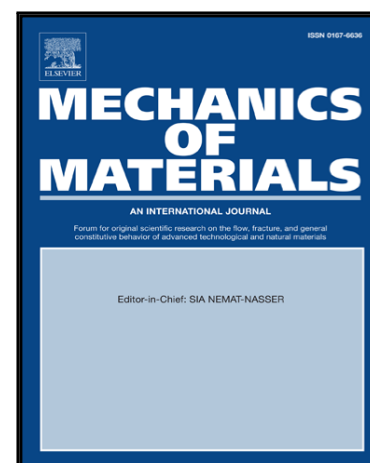


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Computational micromechanics model for the analysis of fiber kinking in unidirectional fiber-reinforced polymers

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Highlights

- Development of a novel experimental technique to characterize the compressive strength of reinforcement fibers.
- Development of a simplified micromechanical model to homogenize the nonlinear shear curve of a unidirectional composite lamina.
- Validation of an efficient numerical model to analyze fiber kinking initiation (compressive strength) and damage evolution during kink band broadening.
- Qualitative and quantitative assessment of the post-peak features typical of fiber kinking: kink band broadening, residual crushing stress and fiber rotation.
- Evaluation of the influence of the fiber-matrix interface strength and friction on the initiation and evolution of fiber kinking.

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