

(homogenization and heterogenization), a parametric study of the mechanical characteristics of novel 3D printed three-component composite material was performed. Results indicate that for the bending test strength of the composite is strongly affected by microstructure parameters even in case when they do not lead to fibers and defects volume fraction variation. Unlike the case of tensile tests, during bending this effect is observed even for the case of defects absence. The estimated uncertainty in three-component composite strength of approximately 8% thus should thus be taken into account when designing 3D printed composite structures.

The developed multiscale models can be used in the calculation of large-sized structures by use of implemented multiscale technique.

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