



## Micromechanical Material Models Using Advanced Simulation Techniques

By Dr. -Ing. Ghayath Al Kassem

VDM Verlag. Paperback. Condition: New. 160 pages. Dimensions: 8.7in. x 5.9in. x 0.4in. This work deals with the determination of macroscopic material properties of polymer composites by meso-mechanical numerical modeling. Focus is laid on the methodology how to build up appropriate representative volume elements (RVE) to describe the microstructure of spherical-particles and fibers reinforced composites and how to apply appropriate 3D boundary conditions. This work includes the comparison of the micro structural simulated FE-models with existing empirical and semi analytical formulations like Mori-Tanaka and the interpolative double inclusion (Lielens Model) that are used extensively in material modeling. Material characterization experiments are done on a particle reinforced polymer composite and its unfilled matrix to extract the material properties then compared with numerical homogenization applied on our micro material models. Different cases of numerical homogenization are examined. The isotropic case assumed for the particle filled composites (spherical incl. ) and the transverse isotropic/orthotropic cases assumed of the fully-aligned/General-Orientation fiber reinforced composites (sphero-cylindrical and cylindrical inclusions). This item ships from multiple locations. Your book may arrive from Roseburg,OR, La Vergne,TN. Paperback.



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