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Autore	Schemmann Malte
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Sommario/riassunto	The focus of this work lies on the microstructure-based modeling and characterization of a discontinuous fiber-reinforced thermoset in the form of sheet molding compound (SMC). A microstructure-based parameter identification scheme for SMC with an inhomogeneous fiber orientation distribution is introduced. Different cruciform specimen designs, including two concepts to reinforce the specimens' arms are evaluated. Additionally, a micromechanical mean-field damage model for the SMC is introduced.