

Vortrag

THERMOVISCOPLASTIC MODELLING OF ASYMMETRIC EFFECTS FOR POLYMERS AT LARGE STRAINS

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Glassy polymers such as polycarbonate exhibit different behaviours in different loading scenarios, such as tension and compression. For the simulation of these asymmetric effects we present a framework for thermoviscoplastic modelling of polymers at large strains. To this end a flow rule is postulated within a thermodynamic consistent framework in a mixed variant formulation which is decomposed into a sum of weighted stress mode related quantities. The different stress modes are chosen such that they are accessible to individual examination in the laboratory, where tension and compression are typical examples. The characterisation of the stress modes is obtained in the octahedral plane of the deviatoric stress space in terms of the Lode angle, such that stress mode dependent scalar weighting functions can be constructed. Furthermore the numerical implementation of the resulting set of constitutive equations is used in the finite element program ABAQUS to simulate the laser transmission welding process

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gez. Prof. Dr.rer.nat. Hartmaier



INTERDISCIPLINARY CENTRE FOR
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