

# CHARACTERISATION OF STRUCTURAL CHANGES DURING DEFORMATION AND RELAXATION OF SEMI-CRYSTALLINE POLYMERS BY SAXS

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Time resolved small angle x-ray scattering using synchrotron radiation allows to follow up structural changes during deformation and relaxation of semi-crystalline polymers. On the example of polyethylene, polypropylene and polyamide the changes of the structure in the crystalline and in the amorphous domains were followed during the three characteristic stages of the load-displacement curves: The elastic stage and the plastic range composed of the stage of the lowering load in the force-displacement-curve (yielding) and the strain hardening.

It is found that most rigorous changes are observed during yielding, whereas changes on a scale of seconds during relaxation are more pronounced than during the loading steps. The effect of temperature will be discussed.