

Interdisziplinäres

Mittwoch

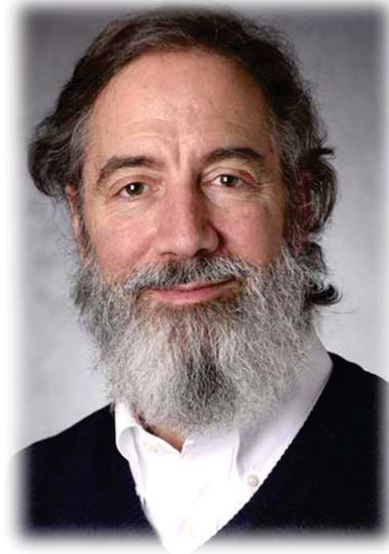
6. November 2019 16:15 Uhr

Jacob-Volhard-Hörsaal

Snacks und Getränke im Anschluss

Prof. Dr. Ralph H. Colby

Department of Materials Science
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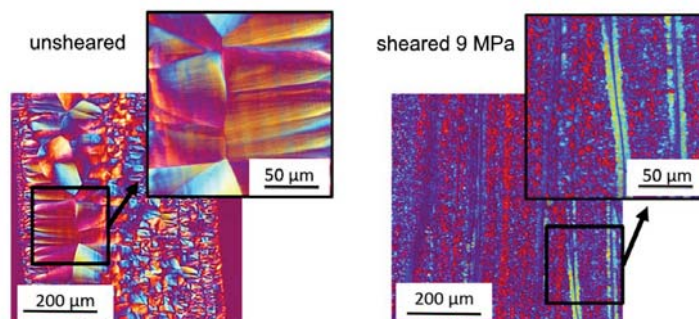


Kolloquium

Flow-Induced Crystallization of Engineering Thermoplastics

Brief intervals of shear flow at rates exceeding the reciprocal of the relevant local relaxation time of the longest chains create precursors that nucleate orders of magnitude more crystals. This changes the morphology from the typical $\sim 30 \mu\text{m}$ spherulites to far smaller $\sim 1 \mu\text{m}$ crystallites, ultimately leading to much improved mechanical properties. These precursors are very stable, enabling the effects of well controlled shear in a rheometer to be studied using polarized optical microscopy, AFM, X-ray scattering, DSC and fast scanning chip calorimetry.

These methods are applied to isotactic polypropylene, polyamide 66 and poly(ether ether ketone) to identify which aspects of flow-induced crystallization are universal and which are polymer-specific.



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