

# Extensional flow and structure in branched model polymer (polystyrene) melts

**Almdal, Kristoffer**

*Publication date:*
2017

*Document Version*
Publisher's PDF, also known as Version of record



*Citation (APA):*
Almdal, K. (2017). Extensional flow and structure in branched model polymer (polystyrene) melts. Abstract from Exxon Seminar, Annandale, United States.

# Extensional flow and structure in branched model polymer (polystyrene) melts

*Kristoffer Almdal; DTU Nanotech, Technical University of Denmark; kral@dtu.dk*

The relation between molecular conformation, molecular structure, and flow behavior has been studied for a number of model polystyrene melts. In particular, strong controlled extensional flows and relaxation following strong extensional flow have been in focus. Model structures include narrow molar mass distribution one and two component melts and branched melts such as stars and pom-poms. Molecular structure have been elucidated employing selectively deuterium labelled molecules. Either select components of a blend has been labelled or select parts of melt components such as the middle of a linear chain or the ends of the arms in star molecules. The structural characterization has utilized the possibility of quenching the polystyrene melt into the glassy state whereby the conformation are frozen and can be measured by small angle neutron scattering (SANS) even though SANS the experiments are rather lengthy.

The synthesis of branched structures is challenging and some of the synthetic procedures will be discussed.

Lastly, a short part of the seminar will be dedicated to a discussion of the possibilities for extending the synthesis of the branched structures to model branched polyethylene and an example given where selective labelling of polyethylene has been used to study the conformation of a polyethylene containing block copolymer.