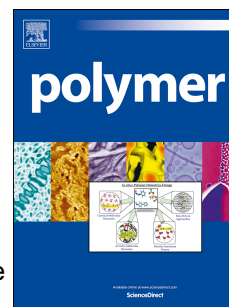


# Accepted Manuscript

Influence of molecular properties on the mechanical fatigue of polystyrene (PS) analyzed via Wöhler curves and Fourier Transform rheology

Valerian Hirschberg, Lukas Schwab, Miriam Cziep, Manfred Wilhelm, Denis Rodrigue



PII: S0032-3861(18)30061-2

DOI: [10.1016/j.polymer.2018.01.042](https://doi.org/10.1016/j.polymer.2018.01.042)

Reference: JPOL 20302

To appear in: *Polymer*

Received Date: 11 November 2017

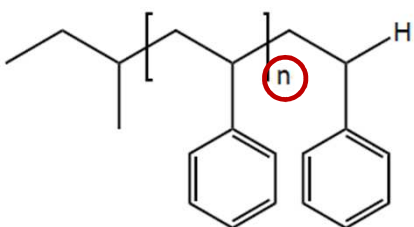
Revised Date: 4 January 2018

Accepted Date: 14 January 2018

Please cite this article as: Hirschberg V, Schwab L, Cziep M, Wilhelm M, Rodrigue D, Influence of molecular properties on the mechanical fatigue of polystyrene (PS) analyzed via Wöhler curves and Fourier Transform rheology, *Polymer* (2018), doi: 10.1016/j.polymer.2018.01.042.

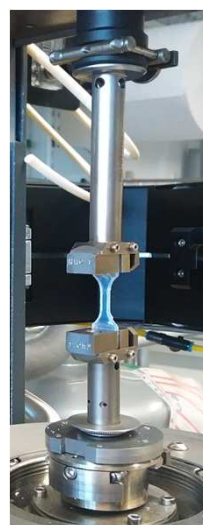
This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Polystyrene model systems (via anionic polymerization)

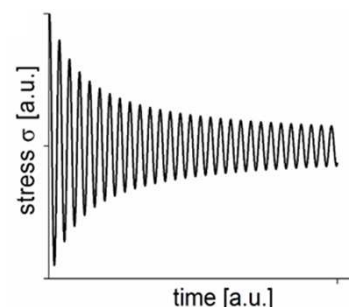


Influence investigated  
of:  
**M**, **PDI**, **MWD**

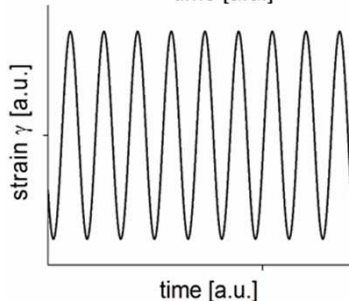
## Mechanical fatigue in torsion



$\sigma$   
stress



$\gamma$   
strain



Number of cycle to failure ( $N_f$ )  
strain amplitude ( $\gamma_0$ )

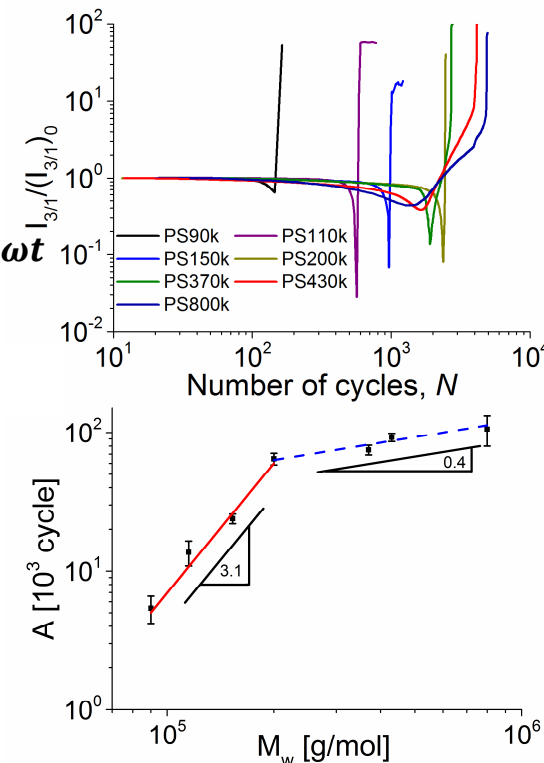
## Wöhler curve & Fourier transform of the stress

### Continuous Analysis

$$\sigma = I_1 e^{i\omega t} + I_3 e^{3i\omega t} + I_5 e^{5i\omega t} + \dots$$

$$N_f = A \gamma_0^{-4.6}$$

$$A = A(\mathbf{M})$$



Download English Version:

<https://daneshyari.com/en/article/7820926>

Download Persian Version:

<https://daneshyari.com/article/7820926>

[Daneshyari.com](https://daneshyari.com)