

SL 6.7

## **Linear Viscoelasticity on Short Time Scales - Oscillatory Rheometry with High Frequency Option up to 10kHz**

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Oscillatory viscoelastic measurements on conventional rotational rheometers give reliable results only up to approximately  $10^2$  Hz depending on the used instrument and sample. To correlate linear viscoelasticity with processing flow behaviour, informations on shorter time scales are needed. To extend the frequency range into kHz range, time-temperature superposition can be used, but this principle will fail for samples showing small activation energy or if phase transitions occur in the given temperature range. In such a case the viscoelastic spectrum must be measured directly at constant temperature.

In cooperation with University Ulm a new high frequency option for the Malvern rotational rheometers was developed, which enables measurements up to 10kHz using piezo drive techniques. The available continuous frequency range on Bohlin Gemini rheometer with integrated high frequency option covers now 10 decades. The principle of operation will be introduced and results on different materials are presented as well as a comparison with capillary rheometry data.