**Influence of processing conditions on polymer crystallization**

**measured by fast scanning DSC**

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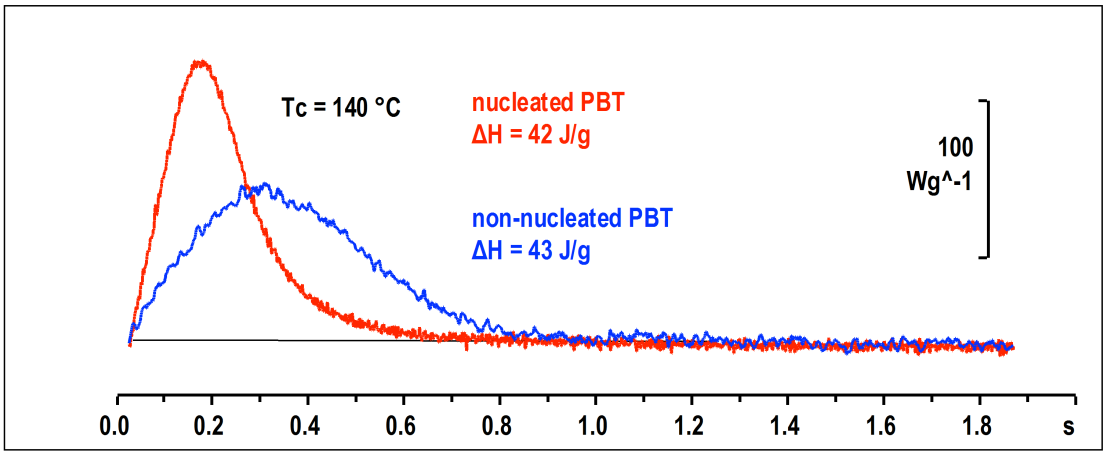
The structural formation of polymers during processing significantly influences the mechanical properties and the temperature stability of polymer products. The analysis of structural formation by conventional thermal analysis techniques is limited due to the relatively low scanning rates. Thus, reorganization during heating changes the initial structure and the applicable cooling rates are not representative for the applied cooling rates during production, i.e., crystallization at high super cooling cannot be investigated. To overcome these limitations, chip calorimeters with very high scanning rates have been developed. The fast scanning Flash DSC 1 based on MEMS chip-sensors allows for scanning rates up to 40,000 K/s.
In this presentation, we discuss some basic concepts of chip calorimetry in general. We then study the influence of additives and molecular modifications on the structural formation at technically relevant cooling rates. This information is crucial for adapting polymer formulation [1] and processing conditions to specific product requirements [2].




Isothermal crystallization curves of PBT at 140 °C.

[1] J. E. K. Schawe, Influence of processing conditions on polymer crystallization measured by fast scanning DSC. *J. Therm. Anal. Calor.* 2013 (11); (DOI 10.1007/s10973-013-3563-8)
[2] J. E. K. Schawe, A. Köhler,
Nachweis von Strukturänderungen mit Flash-DSC-Technik, *Kunststoffe* 4/2014
Using Flash DSC Technology to Verify Structural Changes, *Kunststoffe International* 4/2014