

Abstract:

Capillary Rheometry – A Method to Predict Flow Properties under Processing Conditions

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High Pressure Capillary Rheometry is a useful tool to determine the flow properties under processing conditions such as extrusion or injection moulding. It can help to avoid processing failures in advance, gives insights into formulation changes of the raw material and allows to optimize process parameters.

From capillary data, best suited flow profiles for a given process can be achieved. The advantage of capillary rheometry is the possibility to upscale the measured laboratory data onto process scale. As it gives absolute data, comparison of capillary rheometry with rotational rheometry is possible.

The talk will cover the principle of operation of a capillary rheometer as well as the basic relations to get viscosity data from laminar pipe flow. Typical applications like shear and extensional properties, thermal degradation of polymer melts, flow instabilities due to elasticity and wall slip effects will be introduced.