Rheology -SH

Capillary Rheometers

***Owner:** Xiaojie Zhou*

Principle :	**Application of a shear rate range and measurement of the correspondent pressure drop from the barrel to the die to determine melt viscosity.**	
Capabilities:	**Measure flow properties of polymers at process temperatures. Determine the effect of flow speed on the polymer flow properties. If possible, measure flow properties at the same speed as the process. Thermal Melt Thermal Stability of Polymer Melt (constant temperature and shear rate or stress)**	
Asset:		**Dynisco LCR** **ASTM D3835** **Strain controlled capillary rheometer equipped with a wide range of dies and pressure transducers.** **Temperatures: RT to +450 °C.**

Melt Flow Tester (to be installed at Spet.)

***Owner:** Xiaojie Zhou*

Principle :	**Melt flow indexer is for a simple measure of material melt flow under a low and narrow range of shear rates at a constant temperature. Test method is standardized in ASTM D1238 and ISO 1133 to measure melt flow rate in g/10 min of a polymer through a capillary die under a specified load. Melt flow rate is an indirect measure of molecular weight (MW). The value is often referenced in material selection process for various application and process needs.**
Capabilities:	**ASTM D1238 and ISO 1133 measurement of MFR / MVR** **Thermal stability tests**

Asset:		**ZwickRoell-Mflow Extrusion Plastometer** **ISO1133 and ASTM D1238Temperatures: RT to +390° C.** **Pneumatic weight selector incl. function of the weight lifting unit - Easy setting-out of the test weight** **- incl. weights 1.2 kg, 2.16 kg, 3.8 kg, 5 kg, 8.7 kg, 10 kg, 12.5 kg, 20 kg, 21.6 kg** **Automatically operated extrudate cutter**

Rotational rheometer

Owner: ***Mengjun Guo***

Principle :	**Application of a shear rate range (in steady mode) or a strain frequency (in dynamic mode) and measurement of the correspondent resistance of the material to flow to determine viscosity and viscoelastic properties (*, G', G" and tan) respectively.**	
Capabilities:	**Measurement of viscosity in a wide range of shear rates (0.01 - 1000 s-1) and temperatures.** **Frequency sweep tests for viscoelastic materials.** **Time sweep test to evaluate stability.** **Temperature sweep test for screening crosslinking temperature, gelation point, …** **Dynamic Mechanical Analyses (DMA) for phase transitions and modulus variation with temperature.**	
Asset:		**TA ARES** **Strain controlled rheometer with high sensitivity for low viscosities.** **Geometries: parallel plates, Torsion rectangular**

Navigation: SH PCL Main Page|Inorganic and Solution Chemistry|Mechanical and Chemical Res|Morphology|Physical|Rheology|Spectroscopy