Measurement of: Magneto-rheometer measurements

Equipment: Magneto-rheometer

Property Measured: (i). Shear stress, (ii). Strain, viscosity
(iii). Storage & loss modules
(iv). Oscillatory measurements

Photograph: Magneto-rheometer

Basic Principle:

Magneto-rheometer is an advanced technique based on parallel plate geometry to study the rheological, viscoelastic, tribological and dielectric properties of liquids, semi solid in varying shear rate, temperature, magnetic field etc. At NPL, we have MCR 301 magneto-rheometer equipped with rheomicroscopy, dielectroscopy and tribology with min. torque ~ 0.1 μNm, temperature~ 300 K, magnetic field ~ 1 Tesla, freq. range ~ 10^{-4} – 100 Hz, shear rate 10^{-6}-3000 /min.

Capabilities:

Magneto-rheometer	
Magnetic Field	**1.2 Tesla**
Freq. range	**10^{-4} – 100 Hz**
Min. torque	**0.1 μNm**
Shear rate	**10^{-6} – 3000/m**
Temperature	**300 K**
Type of Analysis	➢ **Flow rotation mode: shear stress, shear rate etc.,** ➢ **Oscillatory mode: storage modules, loss modules etc.,**

Sample Requirement: Liquid samples (~ 10 ml, nonabrasive; toxicity should be mentioned)