

AR-G2 Magnetic Bearing Rheometer

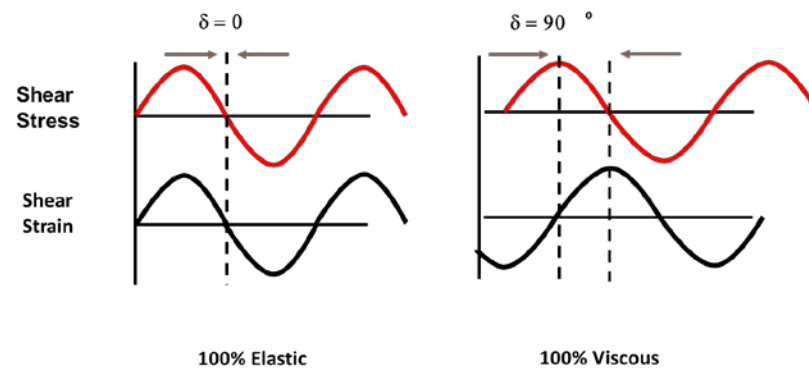


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TA instruments

Introduction

Rheology is the science dealing with the deformation and flow of matter; also: the ability to flow or be deformed. The AR-G2 is a combined motor and transducer (CMT) instrument and is a stress-controlled machine.

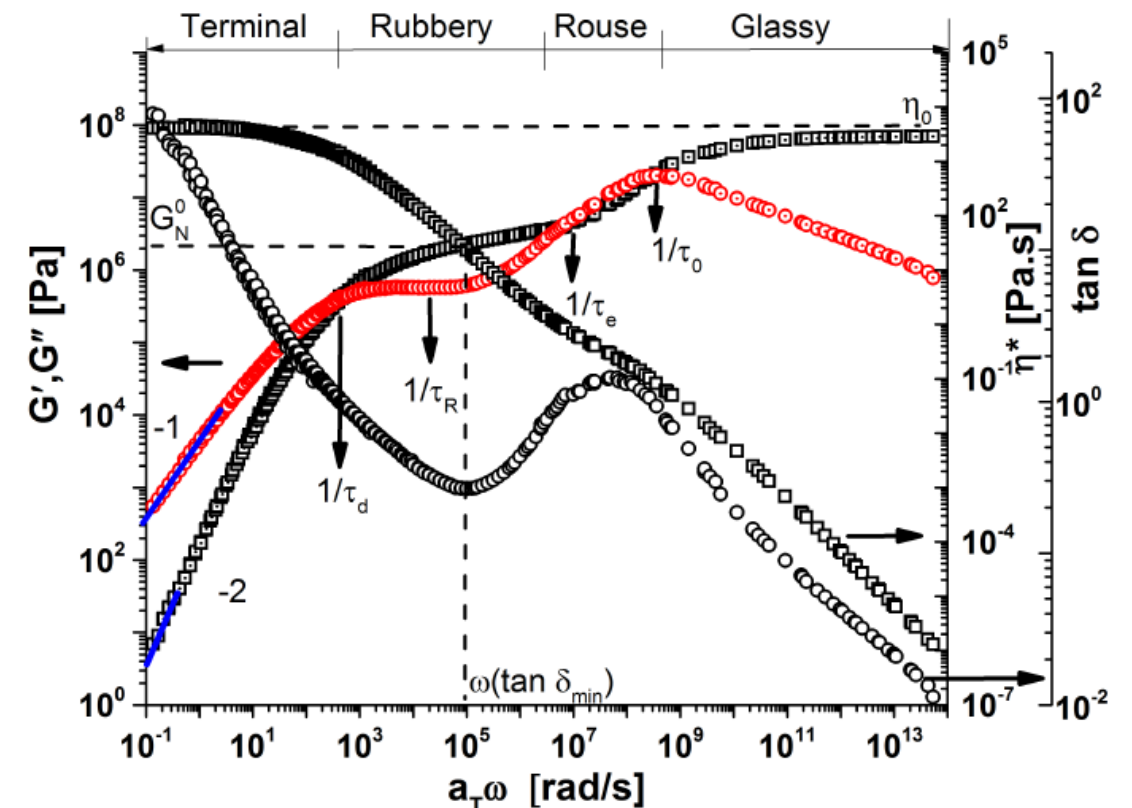


Principle

The viscoelastic properties using either transient or dynamic oscillatory tests. The most common test is the dynamic oscillatory test, where a sinusoidal stress (or strain) is applied to the material and a resultant sinusoidal strain (or stress) is measured. Also measured is the phase difference, δ , between the two sine waves. The phase lag will be 0° for purely elastic materials and 90° for purely viscous materials. However, viscoelastic materials (e.g. polymers) will exhibit an intermediate phase difference.

Applications

- Understanding the molecular structure–rheology relationship, e.g. long-chain branching (LCB).
- Obtaining characteristics of materials like melting point, glass transition, rubbery-elastic characteristics, entanglement density, and processability.
- Correlating the rheological behavior with processing design and end-use performance.



Superimposed master curve of polymer melt via time-temperature supposition (TTS).