Dynamic storage modulus

What is dynamic modulus?

Dynamic modulus (sometimes complex modulus) is the ratio of stress to strain under vibratory conditions(calculated from data obtained from either free or forced vibration tests,in shear,compression,or elongation). It is a property of viscoelastic materials.

What is a storage modulus?

The storage modulus is a measure of how much energy must be put into the sample in order to distort it. The difference between the loading and unloading curves is called the loss modulus,E ". It measures energy lost during that cycling strain. Why would energy be lost in this experiment? In a polymer,it has to do chiefly with chain flow.

What is the difference between storage modulus and dynamic loss modulus?

The storage modulus is often times associated with "stiffness" of a material and is related to the Young's modulus, E. The dynamic loss modulus is often associated with "internal friction" and is sensitive to different kinds of molecular motions, relaxation processes, transitions, morphology and other structural heterogeneities.

What is dynamic modulus vs frequency?

Dynamic storage modulus (G ?) and loss modulus (G ?) vs frequency (Dynamic modulus, n.d.). The solid properties of plastics are especially important during injection molding and extrusion. During injection molding, plastics with a large storage modulus tend to shrink more and to warp more after molding.

How to convert dynamic storage modulus to relaxation modulus?

It can be described as the relationship between "catching up" and "waiting". Therefore, a simple method for converting the dynamic storage modulus and relaxation modulus is proposed by introducing the "catch-up factor " and "waiting factor " based on the basic linear viscoelastic theory and Boltzmann superposition principle.

What is a dynamic modulus of a polymer?

These properties may be expressed in terms of a dynamic modulus,a dynamic loss modulus,and a mechanical damping term. Typical values of dynamic moduli for polymers range from 106-1012 dyne/cm2depending upon the type of polymer,temperature,and frequency.