Storage modulus after chain extension

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.

How does a chain extender affect reactive modification?

The chain extender's effects on the reactive modification were characterized through the PA6 chain's rheological properties, including the storage modulus, the loss modulus, and the dynamic complex viscosity. The EP-modified PA6 was shown to have the highest viscoelasticity; that is, the highest melt strength.

What is storage modulus in tensile testing?

Some energy was therefore lost. The slope of the loading curve,analogous to Young's modulus in a tensile testing experiment,is called the storage modulus,E '. The storage modulus is a measure of how much energy must be put into the sample in order to distort it.

What happens after adding the chain extender SMA?

After adding the chain extender SMA,the curve radius of PA6/SMA and TPAE/SMA increases,while the phenomenon of end upturning is not obvious,indicating that its molecular weight increases but the degree of branching is low.

Does chain extender type affect foaming behavior?

Effects of different chain extender types on foaming behavior The batch melt foaming process with CO 2 was also used with the IBC, BOZ, IBC and BOZ, and the EP-modified PA6 at a foaming temperature of 215 °C and a CO 2 pressure of 25 MPa, respectively.

Which polymer can be modified using a chain extender?

Chain extenders have been widely used for the modification of such polymers as poly (ethylene terephthalate) (PET),poly (butylene terephthalate) (PBT),and polyurethane (PU),,. Polyamides 6 (PA6) is also a good material for use in polymer modification because of its inherent chemical functionality ,,.

Frequency sweeps (Fig. S14, Supporting Information) demonstrated frequency-dependent modulus, and this phenomenon was the typical behavior for hydrogels crosslinked ...

The storage modulus and the loss modulus are represented by the open and filled symbols respectively. The uniaxial extension experiments were carried out using a first generation SER ...

On-line rheology and intrinsic viscosity measurements of PLA before and after chain extension confirmed that

the molecular weight increased.

Interestingly, the modulus recovery time in these tests are in the order of 10 2 s, around 2 orders of magnitude longer than the linear viscoelastic relaxation time ?d, (?0.86 s) as ...

Phosphites can increase the stability of PLA through the chain extension with PLA. In this paper, the molecular weights, complex viscosities and storage modulus of virgin ...

The storage modulus of samples increases significantly and tends to the same value at high frequency after chain extension and blending, but there is a big difference at low frequency.

Boltzmann Superposition Step Strain: Relaxation Modulus Generalized Maxwell Model Viscosity Creep/Recovery: Creep Compliance Recoverable Compliance Steady State Compliance ...

For example, PET, after being chain-extended by PMDA shows significantly increased viscosity, storage modulus and molecular weight, while im-proving the toughness of the material. [95]

Due to the structural advantages of the more highly connected networks of the pentablock and nonablock polyelectrolytes, the storage modulus of the resulting hydrogels was ...

Dynamic mechanical properties of WPU films were studied by DMA. Fig. 9 shows the variation in the storage modulus, loss modulus, and tan delta of WPU films ...

Thermoset rheological characterization is typically done using controlled strain experiments. We discussed this in the Dynamic Mechanical ...

Since the structure and morphology characteristics, the storage modulus (E") of TPAEs fast decrease from about 3000 MPa in glassy state to ...

The storage modulus E? defines the energy stored in the PLA and the PLA with the chain extender specimens due to the applied strain, which corresponds to the stiffness of ...

Compared with pure P34HB, the samples after chain extension showed improved rheological properties, with increased viscosity and melt ...

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The peeling strength of the joint based on the polysiloxane incorporated WPU after four steps of chain extension was 430% higher than that prepared through only two steps ...

The long-chain structure of polymers does make them behave differently from other materials. These chains can undergo conformational change: each bond along the chain can rotate, ...

Dicumyl peroxide (DCP), used as an initiator, was purchased from Sigma-Aldrich and the chain extender adipic acid (AA) was received from TCI Chemicals for ...

The storage modulus of samples increases significantly and tends to the same value at high frequency after chain extension and blending, but there is a big diference at low frequency.

0 At short times, the stress is at a high plateau corresponding to a "glassy" modulus Eg, and then falls exponentially to a lower equilibrium "rubbery" modulus Er as the polymer molecules ...

On the basis of two-steps chain extension via two different PBS chain extenders, carboxyl addition (ADR9) and hydroxyl addition (BOZ), the transformation of ...

In addition, after the chain extension reaction, the residual NCO groups reacted with amine groups in the chain extender which increased the degree of ...

In this paper, the no-shrinkage chain-extend PBAT-glycerin monostearate (GMS) foams with ultra-high volume expansion ratio (VER) were prepared by scCO 2 -assisted ...

In a shear experiment, G = ? / ? That means storage modulus is given the symbol G" and loss modulus is given the symbol G". Apart from providing a little more information about how the ...

(a) Complex viscosity and (b) storage modulus as a function of frequency for PA6 and PA6/organoclay nanocomposites with and without chain extender. [Color figure can ...

The storage modulus measures the resistance to deformation in an elastic solid. It"s related to the proportionality constant between stress and strain in Hooke"s ...

Rapid shear and recovery behavior of the hydrogel o -Cys-P 4 -Cys at 15 (w/v)%. (A) Fast drop in shear modulus and viscosity at the start-up of steady shear at 1 s -1 strain rate for 50 s. (For ...

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The relaxation spectra of samples were calculated from storage modulus (G ?) using the methodology proposed by Kontogiorgos along with the MATLAB code developed by ...

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In general, the value of the storage modulus obtained from an extensional experiment is about three times larger than the value of storage modulus obtained from a shear experiment.

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These materials exhibit stable storage modulus (100 ~ 102 MPa) with high energy dissipation (loss factor > 0.4) over a broad frequency range (10-1 ~ 107 Hz)/temperature range ...

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