

Storage modulus and gel hardness

The storage modulus showed linearity between 20 and 100 mM EDC; the value of the storage modulus saturated at approximately 1600 Pa at the highest concentrations of EDC (150 and 200 mM).

The increase in the concentration of lecithin is ineffective due to the formation of gels with a weak matrix and low hardness, gumminess, and stability during storage. ... The frequency independence is characteristic for a purely elastic gel [22,28]. The storage modulus (G?) develops similarly for all investigated samples at frequencies ...

The gel properties and secondary structures of soybean protein isolate/egg white composite gels with different blend ratios and protein concentrations were investigated in this paper. The hardness, springiness and water-holding capacity of composite gels were all increased with the increase in the protein concentrations. When total protein concentration ...

Changes in gel hardness (g) of samples with no chymosin, calf chymosin, or camel chymosin during storage at 4°C. The value of gel hardness was affected by both chymosin addition (P < 0.05) and the storage period (P < 0.05). White bar = d 0, wavy bar = d 7, bar with pattern = d 14, bar with vertical lines = d 21, and bar with horizontal lines ...

the loss modulus, see Figure 2. The storage modulus, either E" or G", is the measure of the sample"s elastic behavior. The ratio of the loss to the storage is the tan delta and is often called damping. It is a measure of the energy dissipation of a material. Q How does the storage modulus in a DMA run compare to Young"s modulus?

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soft solid (e.g., paste or gel), it is mostly tested between a parallel plate or a cone and plate. If the sample is in a stiff solid state, then it is tested in the torsional mode. ... The storage modulus remains greater than loss modulus at temperatures above the normal molten temperature of the polymer without crosslinking. For a crosslinked ...

As expected, the results manifested that the higher the KC addition (0.75 % - 1.0 %, w/w), the greater the hardness and storage modulus G? of the gel. Moreover, as the droplet size of emulsion reduced (0.5-1.0 mm), it interacted more strongly with the gel matrix and the oxidative stability of the oil in emulsion gel was enhanced. However ...



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Download scientific diagram | Gel rheological properties as a function of hardness. a) Hardness at 2 speeds as a function of equilibrium modulus (G'' at 0.01Hz) and the inverse of the compliance ...

The storage modulus and hardness of all gels increased with the increase in gelatin concentration, indicating that the polymer concentration in the continuous phase played an important role in ...

Oleogels based on three different oils (sunflower oil, solid coconut oil and liquid coconut oil) were formulated using v-sitosterol. In general, an observed increase in crystallinity was correlated with an increase in the gel storage modulus and hardness. Addition of lecithin promoted the formation of needle-like crystals of v-sitosterol with a corresponding increase in ...

Increasing emulsion oil content enhanced the storage modulus, relaxation modulus, and hardness of gels, which indicated sodium caseinate-stabilized emulsions were active fillers in the starch gel. Thus, printed products with high oil content were less prone to collapse when selecting models with higher height.

The storage modulus (G") and loss modulus (G?) values, gel hardness, and elasticity of P-Ch1 were significantly higher than those of P-Ch0 gel. However, a further increase in the content of chitosan in the gel significantly reduced these parameters. The inclusion of chitosan into the pectin gel led to a decrease in weight and an increase in ...

Loss tangent (tand) is a ratio of loss modulus to storage modulus, and it is calculated using the Eq. (4.19). For any given temperature and frequency, the storage modulus (G") will be having the same value of loss modulus (G") and the point where G" crosses the G" the value of loss tangent (tan 8) is equal to 1 (Winter, 1987; Harkous et al ...

Under both gelation methods, there was a significant positive correlation between the gelatin concentration and the storage modulus or the hardness of the gels (r > 0.990, p < 0.01). The filling volume and droplet size of TGase-induced gels were negatively correlated with the storage modulus and hardness.

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