Storage modulus of starch

Which starch has the largest elastic moduli?
In terms of magnitude,the elastic moduli (G ?) of Purity NCS-Aat 10% concentration are the largest (2380 Pa) compared to the other three starches. Melojel is the second largest with 2090 Pa,and Purity 660 and National 1658 with 1650 and 1410 Pa,respectively.

How is the viscoelastic region of starch determined?
The linear viscoelastic region for each type of starch was determined using dynamic strain sweep. Both the elastic and viscous modulus showed only slight dependence upon frequency. The starch gels were classified as weak gels on the basis of their mechanical spectra.

Does concentration affect starch gel properties?
Dynamic measurements were performed to study the effect of concentration and the extent of modification on starch gel properties. The linear viscoelastic region for each type of starch was determined using dynamic strain sweep. Both the elastic and viscous modulus showed only slight dependence upon frequency.

Which starch has a viscoelastic solid behavior?
All starchesshowed viscoelastic solid behavior at higher concentrations (6-10% w/w). Critical gelling concentrations were found to be 4,4,6,and 6% for native corn starch,medium hydroxypropylated distarch phosphate,highly hydroxypropylated distarch phosphate,and distarch phosphate,respectively.

Does starch modification affect dynamic shear properties of starch gels in water?
The effect of starch modification and concentration on the dynamic shear properties of starch gels in water was studied. The four types of starches used were native corn starch, medium hydroxypropylated distarch phosphate, highly hydroxypropylated distarch phosphate, and distarch phosphate.

How big are starch granules?
Starches in their native form appear as discrete granules of size 1-50 um,depending on the starch variety present (e.g.,corn,rice,etc.) and the chemical functionalization (e.g.,cross-linking) of the granules (Hoover,2001; O'Neill &Field,2015; Singh et al.,2010; Yadav et al.,2016).

The models for rheological properties such as storage and loss moduli are inadequate in literature, which cannot offer a suitable view. In this paper,...

Dynamic measurements were used to characterize the viscoelastic behavior during gelatinization of wheat, maize, potato and waxy-barley starches. During the experimental conditions used the curves ...

The dynamic rheological properties, such as storage modulus (G"), loss modulus (G""), and loss factor (tan ?), were determined for starches. Starch ...

Storage modulus of starch

The following components of the complex modulus of elasticity were calculated: storage modulus (G ") and the loss modulus (G ?). The storage modulus is associated with the part of potential deformation ...

We present a methodology to predict the storage modulus (G") of starch paste due to granule swelling, given the physical properties of the starch gran...

Abstract A new technique for studying starch gelatinization under shear stress using dynamic mechanical analysis (DMA) with shear sandwich mode is reported. Rice starch was used as the ...

To unravel changes in the structures and digestibility of sweet potato starch in the roots during postharvest storage (0 to 20 days), starches are isolated and characterized in terms of ...

The influences of sodium chloride (NaCl)/sucrose on starch properties as affected by starch structural characteristics are little understood. In this study, the effects were observed in ...

For non-waxy millet starch, the ratio of retrogradation (R%) was positively cor- / related with amylose content. Among all starches, the storage modulus (G) was higher than the loss modulus (G) during ...

The starch pastes behaved like a pseudoplastic fluid and exhibited shear thinning fluid character-istics with values of flow behaviour index considerably less than 1. Both the storage and loss moduli of the ...

The storage and loss moduli varying over several order of magnitudes, the imposed stress during each experiment had to be continuously adjusted. The stress was initially set to 0.5 Pa ...

The effects of MD on the physicochemical, microstructural, and cooking properties of sweet potato starch (SPS) noodles, as well as the mechanism of SPS-MD ...

This study performs Stokesian dynamics simulations of suspensions of rigid spheres to determine the conditions under which swollen starch granules can be considered rigid for rheology measurements. ...

The flow behavior index (n) of starch-NADES dispersion was closer to 1, indicated a nearly Newtonian fluid. The loss modulus (G?) value of starch-NADES dispersions was markedly ...

The storage modulus, loss modulus, damping factor and complex viscosity as a function of frequency (?) of the dioscorea gels, as well as the ...

NaCl affected rheology of vacuum freeze dried starch nanoparticle (VFDSN) suspensions. The addition of NaCl was found to increase the viscosity of VFDSN suspensions. The ...

The linear viscoelastic region for each type of starch was determined using dynamic strain sweep. Both the

elastic and viscous modulus showed only slight dependence upon frequency. ...

The formation of starch gel structure results from the gelatinization and retrogradation of starch in aqueous solutions, which plays a crucial role in...

Addition of the structure-making (salting-out) ions, such as F - and SO 4 2-, decreased freeze-thaw stability and increased gel strength, maximal storage modulus (G?) and maximal loss ...

a Storage modulus and loss microscopic maps of polypropylene reinforced with cyclic olefin copolymer (COC), b Storage modulus variation curves of polypropylene matrix and COC at 10 Hz, c loss ...

The elastic or storage modulus (G ?), viscous or loss modulus (G ?), and loss tangent (tan ?) are the main parameters that describe the rheological behavior of starch.

Download scientific diagram | G? (Storage modulus) of starch mixtures during temperature sweep in dynamic oscillation. HARS, high-amylose rice starch; ...

Ascent of storage modulus was lower for PSH doughs compared to control, suggesting a decrease in the volume fraction of dispersed starch granules ...

Abstract We present a methodology to predict the storage modulus (G ") of starch paste due to granule swelling, given the physical properties of the starch granule and temperature history.

Download scientific diagram | The storage (G) and loss (G") modulus, and tan (?) curves of sweet potato starch (SPS) gels with 2% (w/w) maltodextrin (SPS-2% ...