寒天ゲルの粘弾性の温度依存性

Temperature Dependence on the Viscoelasticity of Agar Gel

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The effect of temperature on the rheological properties of agar gel (0.5～2.0g/100ml) was studied. The dynamic and static measurements of the samples were made at temperature ranging from 5℃ to 60℃ using Rheolograph - Gel and Parallel plate viscoelastometer. The dynamic modulus (E'), dynamic loss (E'') and Young's modulus (E_H) of agar gel showed convex curves which have maximal values between 30 and 40℃, 40 and 50℃, and at 30℃, respectively. However, it was recognized that the values of mechanical loss tangent of agar gel were increased monotonously. The dynamic modulus (E'_S, E''_S) calculated using the static viscoelastic constants had a similar tendency to the dynamic modulus (E', E'') with respect to temperature. It was suggested that the elasticity of agar gel was entropic in the case when elastic modulus was increased in accordance with temperature. In the dynamic viscoelastic constants the agreement between experimental and calculated values is fairly well at each temperature.

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