
Mechanical & Rheological characterization of agar gels in Glycerol/Water co-solvent

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Résumé

Glycerol is widely used as a colligative cryoprotectant that raises the osmolality of body fluids and reduces the water available to form extracellular ice. It is also active in maintaining the structure of biological macromolecules and in promoting protein self-assembly through preferential hydration. Moreover, the Glycerol/Water (G/W) system is a mixture of choice if one wants to easily vary the viscosity of the fluid and the viscoelastic properties of polymer solutions and gels. In this work, we are interested in the mechanical & rheological properties of Agar gels in Glycerol/Water co-solvents. While agar is very well known for its gelling ability in water upon cooling, with the formation of double helices that self-assemble into fibrillar network, our goal is to understand the impact of the glycerol content on the sol-gel transition and ultimate material properties. For this purpose, we will report in this presentation the cold setting of agar networks in various G/W environments and describe their macroscopic properties, toughness, elongation at break, swelling at equilibrium and adhesiveness, in relation with the modification of the 3D structure.

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