

# GRAVITY-DRIVEN INSTABILITIES IN FIBRILLAR COLLOIDAL GELS CONTAINING A SECOND DISPERSE PHASE

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Fibrillar networks are of great importance for biological systems and many industrial applications. We investigate gravity-driven instabilities in fibrillar colloidal gels containing a second disperse phase. We use a model system containing a surfactant-stabilized oil-in-water emulsion dispersed in a gel of cellulose microfibrils in the presence of carboxymethyl cellulose. Optical scanning of the creaming emulsion containing gels along the height was used to quantify the network evolution over time. We find a remarkable correlation between the concentration of microfibrils and creaming behaviour such as initial creaming speed and final gel height. We compare this behaviour to the theoretical model of gravitational stability of poroelastic gels, which was extended to account for particle shape anisotropy and the presence of a second disperse phase.

