

# Nanoscale Organisation and Dynamics Group

University of Western Sydney



## Coupled and phase-separated gels of $\kappa$ -carrageenan

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### Abstract

Most semi-solid and soft foods owe their consistency (viscoelasticity) to more than one structuring element. If two or more gelling agents are mixed, the resulting gel will usually consist of separate elastic networks, which can be phase-separated or interpenetrated, while coupled networks are usually obtained between gelling and non-gelling components. Rheological properties of phase-separated, interpenetrated and coupled networks are in general different. In addition, active-compound release, as well as certain mouth-feel attributes, e.g., melting, creaminess & spreadability, are related to the presence of large scale heterogeneities. In this talk I will go over the rheological properties of  $\kappa$ -carrageenan – an important marine polysaccharide – in mixed binary, ternary and quaternary gels. Coupled gels are obtained with non-gelling plant polysaccharides (konjac glucomannan, locust bean gum), while phase-separation occurs between  $\kappa$ -carrageenan and its related  $\iota$ -form. Synergy, rheological vs. sensory properties and simple conceptual tools to model elasticity will be discussed. Finally, I will present post-doctoral positions currently available at our department.

### Profile

Dr Tom Brenner is a graduate of the University of Iceland, having completed his Ph.D. under the guidance of Dr Ragnar Johannsson of Icelandic Food Research and Dr Taco Nicolai of the University of du Maine (France). He spent two years at Osaka City University with Prof. Katsuyoshi Nishinari and is currently a Japanese Society for the Promotion of Science fellow at Tokyo University of Marine Science and Technology in Dr Shingo Matsukawa's group, researching polysaccharide gel structure through its effect on probe molecule diffusion. His previous research concentrated on aggregation phenomena and rheological characterization in food systems, both from a fundamental standpoint as well as for correlation with food sensory qualities.

**Staff and students at all levels are welcome to attend.**

### Venue and Time:

This talk will be held in School of Medicine Lecture Theatre CA-30.G.213 on  
Thursday November 21 at 3:30 pm.

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