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Multi scale structural insight into cheese by scattering techniques

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Products derived from milk or plant based emulsions by gelation like cheese or yoghurt have a large range of structural features from atomic to macroscopic length scales. Scattering techniques with neutrons and x-rays provide an unique view into this fascinating world of interfaces and networks provided by proteins and lipids. Combining these ensemble averaging scattering techniques with a microscopic view into the gels with environmental scanning electron microscopy (ESEM) and cryo transmission electron microscopy helps in a thorough understanding of such gel systems and the emulsion stabilization and gel formation mechanisms. In this contribution, different milk based products, emulsions and different sorts of cheese and yoghurt, are characterized in terms of their structure on length scales from nm to μm . Information is gathered on the structure of the oil-water interfaces and the gelation process, providing valuable insight for further optimization, especially in view of the design of plant based gelated emulsions.

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