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X-ray scattering techniques as complementary tools for food ingredient/material valorisation

Content

Global demand for food is expected to rise by at least 60% by 2050. At the same time, the food supply chain is under pressure due to limited resources, water scarcity, soil degradation, biodiversity loss and the impacts of climate change. Moreover, more than one third of the food produced in the world today is lost or wasted, thus, further complicating the situation. In addition, our food system has experienced huge transformation during the last century with changes in dietary preferences impacting on consumer health (e.g. increasing non-communicable diseases and obesity) and food availability. In view of this situation, a sustainable food system needs to be strengthened, from farm to fork, to increase food production sustainably while reducing waste in the food supply chain and limiting environmental impacts. In this sense, understanding structure-property relationships, i.e. the connection between food structure and the way a product behaves, is central for a rational product design. Moreover, in a circular economy context, understanding how the different components are structured within the biomass is essential to adequately design the valorisation strategies. Scattering methods are indispensable within the arsenal of characterization methods, having a number of advantages over other widely employed techniques. In this talk, a few examples showing recent results on how scattering tools can help in the characterization of novel food ingredients/materials obtained from diverse biomass valorisation will be shown.

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