

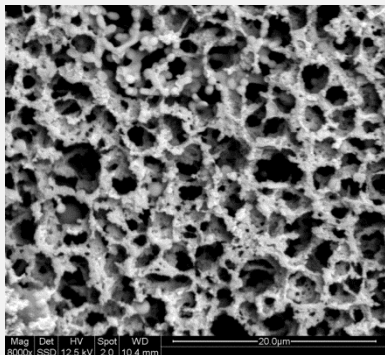
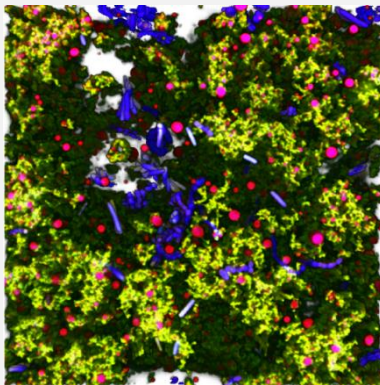
# ARC Dairy Innovation Hub – Research Themes

## Microstructure

Led by Associate Professor Sally Gras at the University of Melbourne (UoM), the *Microstructure* theme applies high resolution microscopic techniques to characterise dairy products including renneted cheeses, cream cheese, sour cream and yoghurt. The project employs postdoctoral fellow Dr Lydia Ong, research assistants Dr Phoebe MacDougall and Ms Hanh Nguyen and masters student Ms Anita Pax. Microscopic techniques such as Scanning Electron (cryo-SEM), Confocal (CLSM), Atomic Force and Transmission Electron microscopy (TEM) are used to examine samples at a laboratory, pilot and manufacturing scale. This information is then correlated with results of chemical and physical testing and other indicators of product quality. This research will assist in the development of products such as low fat and low-salt variants, or products with extended shelf-life and new textural properties for export markets. Microstructural methods can also be used to examine the effect of changes in unit operations and equipment upgrades on product properties, to develop technical guidelines for lower-cost formulations and to reduce waste by better prediction and control of undesirable processing effects during product manufacture.

### Develop methods for yoghurt analysis

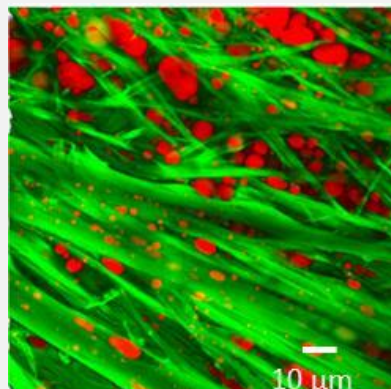
Correlate microstructural information with rheological properties and functionality



*CLSM and cryo-SEM analysis of stirred yoghurt*

### Mozzarella cheese:

Establish structure function relationship – melting, stretch, browning



**CLSM**



**TEM**



**Cryo SEM**

### Key Collaborations with other Hub projects

The UoM Microstructure team will closely collaborate with UQ investigators to link product microstructure to Tribology and other sensory methods.