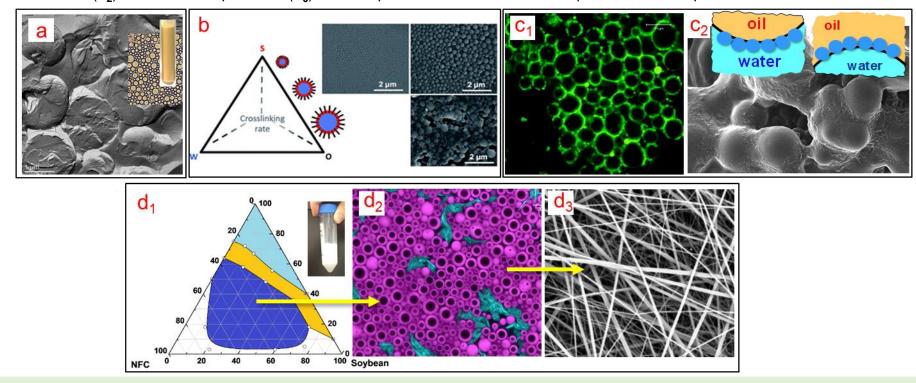


Research Highlights 2015 The year of the emulsions



This year we advanced the use of Surfactant-Oil-Water systems for the synthesis of lignin-based fuel emulsions (see cryo-replica TEM of oil drops emulsified in water) (**a**). Also, lignin nanoparticles were obtained from O/W emulsions (**b**) and were utilized to stabilize functional Pickering emulsions: see confocal microscope, **c**₁ or SEM, **c**₂ images. We developed ternary diagram of SOW systems (**d**₁) containing compositions leading to various emulsion morphologies, including multiple or double emulsions (dark blue zone). The emulsions (**d**₂) were used to spin fibres (**d**₃) after evaporation of the most external phase. This will open new routes for manufacture.



New Projects: Nanocellulose Cyber-Physical Microsystems [CYBERCELLULOSE], Academy of Finland (with Applied Physics and Electrical Engineering), 01.01.2016 - 31.12.2017, 845 062 €