Abstract:
Microfibrillated cellulose (MFC) is a material of high interest due to its sustainability and biodegradability, and unique properties such as, mechanical robustness, barrier properties, large surface area, and lightness. The unique characteristics of MFC, combined with environmental friendliness, make MFC an interesting target for research. A frequently noted issue in the processing of MFC suspensions is their complex rheological behavior. Viscoelasticity and shear thinning are the main characters of these types of coating color. The Oldroyd-B and Giesekus models were implemented in ANSYS Fluent to study the influence of an elastic component of the rheological properties of the coating suspension on the coating flow in a Short Dwell Coating (SDC) process. Also an example of contraction channel geometry shows the viscoelastic models do give rise to vortices very similar to the so-called lip vortices observed in experiments.