Abstract Submitted
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Droplet spreading over a non-Newtonian liquid film[1] GRIGORIOS-ATHANASIOS IOANNIDIS, Aristotle University of Thessaloniki, OMAR K. MATAR , Imperial College London, GEORGE KARAPETSAS, Aristotle University of Thessaloniki — We investigate the spreading dynamics of a liquid lens over a thin fluid layer. We consider the case of a liquid subphase which exhibits non-Newtonian behaviour (described by the Ostwald–de Waele constitutive equation) and we examine the spreading of both clean and surfactant-laden droplets. In the limit of both a thin droplet and a thin subphase, we employ lubrication theory to derive a coupled system of evolution equations for the interface positions and the surfactant monomer interfacial and bulk concentrations and the resulting governing equations are solved numerically using the ?nite element method. The results of an extensive parametric analysis to examine the effects of the physical parameters and rheological characteristics on the flow will be discussed.

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