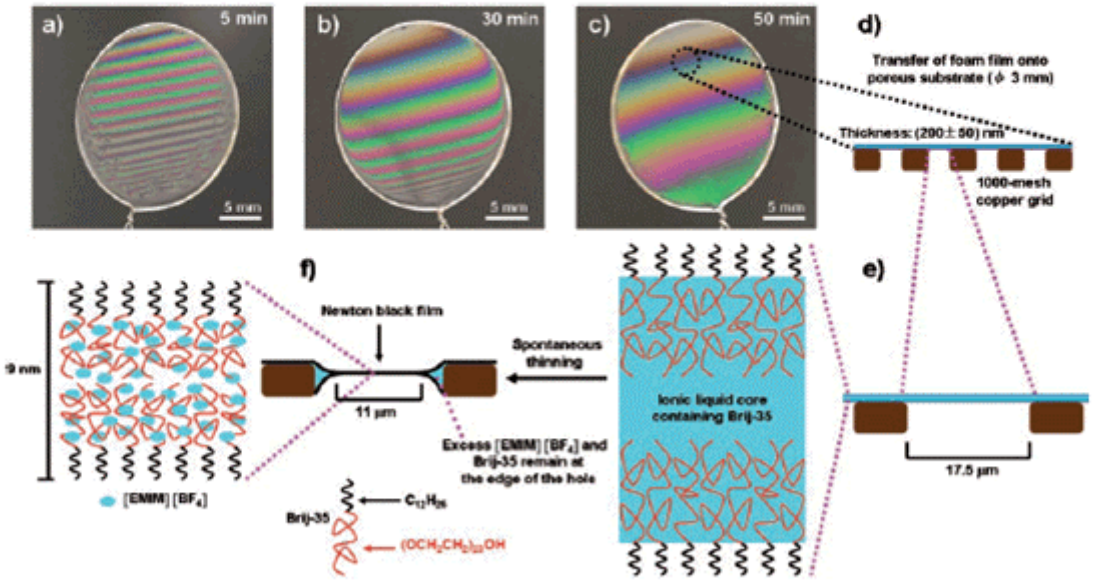
Foam Films Obtained with Ionic Liquid

Foam films were discovered more than three hundred years ago. They were studied exclusively in aqueous systems. We report herein unprecedented properties of Newton black films obtained with an ionic liquid. The centimetre-scale foam films of nonionic surfactants were prepared using 1-ethyl-3-methylimidazolium tetrafluoroborate ($EMIBF_4$) as a solvent, and they were transferred onto submillimetric holes. The films spontaneously became thinner and finally Newton black films solvated with the ionic liquid were left in the holes. The obtained films showed superior thermal stability higher than 150 °C. In addition, it was possible to subject the films to ultrahigh vacuum conditions, in sharp contrast to the conventional black films that are very sensitive to humidity.



Preparation of Newton black films of Brij-35 using 1-ethyl-3-methylimidazolium tetrafluoroborate