

THIN LIQUID FILMS

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SUMMARY [or TOPICS]

Thin liquid films are ubiquitous entities in a variety of settings. In geology, they appear as gravity currents under water or as lava flows. In biophysics, they appear as membranes, as linings of mammalian lungs, or as tear films in the eye. They occur in Langmuir films and in foam dynamics. In engineering, thin films serve in heat and mass transfer processes to limit fluxes and to protect surfaces, and applications arise in microfluidics, paints, adhesives, and membranes. Thin liquid films display a variety of interesting dynamics. Since the interface between the liquid and the surrounding gas is a deformable boundary, these films display wave motion; the waves can travel and steepen under certain conditions for high flow rates, and the waves can make transitions into quasiperiodic or chaotic structures. The film can rupture, leading to holes in the liquid that expose the substrate to the ambient gas. The connectedness of the film changes in this case, as it does if droplets of liquid are dislodged from the film. Changes in structure occur in flows having contact lines leading to fingered patterns. Liquid films may also undergo heat transfer, phase change and be subjected to various types of external forcing.

The symposium is intended to bring some of the leading researchers in the field who will discuss the recent developments in the field.