Drops Behaving Badly

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When fluid dynamics comes up against capillarity, a wide range of interesting phenomena result. This talk will describe three intriguing and unexpected experimental observations for which a mathematical (or even physical) understanding remains to be developed

(i) Deformation of emulsion droplets in optical tweezers and the formation of very long, thin and stable liquid threads.

(ii) Internal flows in drying droplets: why do tracer particles not follow streamlines in low Reynolds number flows?

(iii) Dripping droplets: spontaneous and persistent cycling behaviour in oil droplets at a solid-liquid interface.