

School of Mathematics & Statistics  
Applied Mathematics Colloquium

## Mathematical Modelling of Droplet Evaporation

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15:30  
Room 306 Alan Turing

**Abstract:**

The evaporation of a sessile droplet is a practically important one which is currently the subject of intense research activity both because of the wide range of practical applications (such as, for example, ink-jet printing and industrial cooling) in which it arises and the fascinating and complex behaviour it can exhibit. In the present talk (based in large part on the results of ongoing research with David Pritchard, Brian Duffy, Feargus Schofield and Hannah-May Jolly at the University of Strathclyde and Khellil Sefiane at the University of Edinburgh, as well as aspects of the previously published work cited below) I shall discuss the dynamics of droplets evaporating in a variety of different modes (including the stick-slip and stick-jump modes) and, in particular, how the lifetimes of such droplets depend of the properties of the substrate below and the atmosphere above the droplet.

Dunn, G.J., Wilson, S.K., Duffy, B.R., David, S., Sefiane, K., The strong influence of substrate conductivity on droplet evaporation, *J. Fluid Mech.* 623, 329-351 (2009)

Stauber, J.M., Wilson, S.K., Duffy, B.R., Sefiane, K., On the lifetimes of evaporating droplets, *J. Fluid Mech.* 744, R2 (2014)

Stauber, J.M., Wilson, S.K., Duffy, B.R., Sefiane, K., Evaporation of droplets on strongly hydrophobic substrates, *Langmuir* 31 (12), 3653-3660 (2015)

Stauber, J.M., Wilson, S.K., Duffy, B.R., Sefiane, K., On the lifetimes of evaporating droplets with related initial and receding contact angles, *Phys. Fluids* 27 (12), 122101 (2015)