

UK Fluids Network SIG 10: Fluid Mechanics of Cleaning and Decontamination  
 Authors in SIG

Title	Convective mass transfer from a submerged drop in a thin falling film
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Summary paragraph	Experimental and theoretical study of the convective mass transfer from a small viscous drop attached to an inclined substrate into a submerging flowing liquid film. The Sherwood number characterizing the effect of external convection is modelled theoretically for a dissolved passive tracer moving out of a drop into the film. Experimental measurements were conducted with methylene blue dye dissolved in polymer thickened drop, submerged in a flowing water film.
Novel/notable aspects	Fully predictive model for the Sherwood number in agreement with experimental data, for a drop with multiple chemical species.
Flow key words	Convective mass transfer, drop, multiphase flow, thin films.
Cleaning type/key words	Chemical decontamination, Enhanced diffusion
Field/background	Applied Mathematics; Fluid Mechanics
Theory/method/analysis key words	Advection-diffusion model; lubrication approximation; two-phase model