

# Investigating the Local Mode of Action of Anti-Perspirants using model systems and advanced probing techniques.

**PhD Position available from Oct 2024, University of Liverpool, UK.**

## Supervisory team:

**Professor R Raval** (Academic supervisor), Department of Chemistry, University of Liverpool.

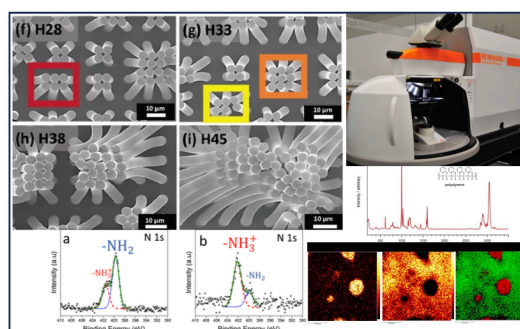
**Dr P Pudney** (Industrial supervisor), Unilever R&D Port Sunlight, Liverpool.

This EPSRC Case PhD studentship is a collaboration between the University of Liverpool and Unilever to understand the action of personal care products on skin at the localised chemical level.

Personal care products represent a £multi-billion global industry. Such products often require high level chemistry to work synergistically within a complex biological environment. However, the actual action of such products is not understood well due to the difficulty of tracking events within a living system. This project will aim to create a step-change in this field by utilising advanced fabrication to mimic biological systems and then deploying sophisticated techniques to understand the action of anti-perspirants (Fig 1) with high chemical and spatial resolution.

The project will fabricate model sweat gland platforms based on recent biological and in-vivo measurement results. The effect of anti-perspirant actives within these mimic systems will be characterised with the advanced surface measurement methods including Atomic Force Microscopy (AFM), Electron Microscopies and localised vibrational techniques of IR and Raman microscopy.

Fig1: Combining advanced fabrication and probing techniques to track science and technology at the local level.



The PhD student will be based at the Department of Chemistry, University of Liverpool and will work within the Open Innovation Hub for Antimicrobial Surfaces and the Surface Science Research Centre.

**The PhD combines interdisciplinary science and global innovation.** Unilever is one of the biggest Beauty & Personal care companies in the world, with a broad and diverse portfolio of brands, e.g. Dove, Rexona, Vaseline, Lifebuoy, Signal, serving billions of consumers across the globe. The Open Innovation Hub for Antimicrobial Surfaces at the University of Liverpool is at the forefront of translating scientific advances into innovation and is one of the four core partners of the £23M National Biofilm Innovation Centre (NBIC) ([www.biofilms.ac.uk](http://www.biofilms.ac.uk)). The student will have the opportunity to enrol in NBIC's **Doctoral Training Centre** which trains interdisciplinary PhD researchers at the Interface of Physical and Life Sciences.

**Eligibility:** This position is open to **UK or a limited quota of EU students only** with the equivalent of at least a 2.1 Honours degree in Chemistry, Materials Science, Biophysics or Engineering. An interview will be undertaken with suitable candidates before an offer is made. Fees and a stipend for up to 3.5 years will be paid provided eligibility is met. **How to apply:** Applicants should apply by e-mailing Lucy Jones (email: [Lucy.Jones2@liverpool.ac.uk](mailto:Lucy.Jones2@liverpool.ac.uk)). You should submit an up to date CV and cover letter with names of at least 2 academic referees. **Deadline: 15 February 2024.** Candidates will be evaluated as applications are received, and the position may be filled before the deadline if a suitable candidate is identified.