

4-year fully funded EPSRC iCASE PhD studentship (P&G – Bristol)

“Sustainable antibacterial fibres”

The pandemic is affecting how consumers perceive clean and fuelling demands for more hygiene products to maintain personal cleanliness. This PhD project, in collaboration with P&G, the world's largest personal care products manufacturer, aims to explore sustainable solutions with in-depth mechanistic learning that underpins new technologies for sustainable antimicrobial products. In addition to hygiene benefits to consumers, high performance products will reduce disposal wastes and environment impact. This study will focus on studying the mechanisms of antibacterial fibre and nonwoven materials. The complex geometric and chemical nature of fibres makes the study challenging and widespread product use drives an urgent need for developing sustainable fibres. Antimicrobial agents (AMA) with mode of actions varying from microbial cell membrane disruption to metabolic disruption will be studied, including peptides and antimicrobials of plant origin. New surface modification strategies will be developed to enable robust AMA immobilization on fibre substrates to deliver durable performance and minimize migration risk, which will be evaluated in collaboration with P&G. The scientific insights are expected to enable new material developments, when taking regulation, safety, and environment constraints into consideration. Advanced experimental capabilities will be leveraged such as visualizing/quantifying AMA-bacteria interactions in real time by optical and fluorescent microscope, AFM, SEM, CryoTEM, synchrotron X-ray and neutron scattering, as well as microbiology tests.

Potential applicants (UK residents or EU citizens with settled status) should have a strong 4-year degree in Chemistry, Physics, Engineering, or Biochemistry. International applicants with exceptional academic records will also be considered. To apply to Bristol Chemistry, please follow the [link here](#). For further information, please email academic supervisor Professor Wuge H. Briscoe wuge.briscoe@bristol.ac.uk and industrial supervisor Dr Meng Chen chen.m.22@pg.com; or chem-pg-admissions@bristol.ac.uk. Further information on P&G can be found at <https://www.pg.co.uk>.