# PhD advert template – 2021 entry

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| **Supervisor name/s** | Prof Tim Birks, Dr Jim Stone |
| **Email contact** | t.a.birks@bath.ac.uk |
| **Department** | Physics |
| **Title of project** | **Optical fibres for deep-ultraviolet light transmission** |
| **Preferred start date** | Monday 4 October 2021 |
| **Application deadline** | Sunday 14 March 2021 |
| **Overview of the research** | A PhD studentship is available within our 5-year project "U-care". U-care targets the generation and delivery of deep-ultraviolet light (200-220 nm wavelength) to solve critical problems in healthcare, including antibiotic-resistant "super-bugs" and the need for cellular-precision cancer surgery. Its interdisciplinary team of about 35 researchers at Bath, Heriot-Watt and Edinburgh universities will include photonic physicists, engineers, biologists, and clinicians at the front line of patient care.<br><br>Bath's role is to conceive, design, make and test a new generation of optical fibres to transmit the light, which is challenging because deep-UV light is strongly absorbed by most materials. We can overcome this by incorporating microscopic structures with precisely-engineered air holes, but challenges remain because they must be small in proportion to the light's short wavelength.<br><br>As the PhD student, you will study these problems and several possible solutions. Although this is likely to require numerical simulations of fibres with unusual designs, you will focus mainly on experiments: the fabrication of new fibres, the measurement of their optical properties, and the construction of prototype optical devices, all in our state-of-the-art fibre fabrication facility and optical laboratories. You'll be able to own the whole "fibre life-cycle", from concept to application.<br><br>At Bath you'll work (and be supported and trained) alongside an experienced post-doctoral researcher on U-care, a broader team of students and postdocs working on healthcare photonics, and academic supervisors with many years' experience of world-leading fibre-optics research. You'll focus on your own research while engaging with the wider project; you can expect to travel for joint experiments with collaborating scientists in other disciplines and institutions. You'll discuss your research and others' at weekly meetings of Bath's Centre for Photonics and Photonic Materials, and at U-care project meetings here and in Edinburgh. You can also expect to travel to international conferences to present your successful results.<br><br>You'll need (or expect to get) a good degree in physics or a related subject; you'll also need to be driven by curiosity for photonics, and excited by the prospect of your research having a real impact on the big challenges in medicine.<br><br>Interested candidates should contact Prof Tim Birks at t.a.birks@bath.ac.uk for further information. Details of the applications process can be found at https://www.findaphd.com/phds/project/optical-fibres-for-deep-ultraviolet-light-transmission/?p130003. |
| **Application criteria** | Applicants should hold, or expect to receive, a First Class or good Upper Second Class Honours degree (or the equivalent) in Physics or a closely-allied science or engineering subject. A master's level qualification would also be advantageous. Applicants should have a strong interest in photonics and its healthcare applications. |

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| **Funding** | Directly funded project: U of Bath LURS |
| **Who is the funding for?** | UK & EU/EEA students meeting the criteria for Home fees |
| **Duration of funding** | 3 years |
| **Programme** | PhD in Physics |