Applications are invited for a research studentship in the field of Additive Manufacture for Medical Engineering, leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by the EPSRC and Renishaw. To be eligible for funding you must have no restrictions on how long you can stay in the UK and been ordinarily resident in the UK for at least 3 years. If in doubt, please check your suitability at the following web site: http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx

In orthopaedic surgery, we repair, reconstruct or replace parts of human joints. This requires fixing different types of implants to the bone. Conventional manufacture of orthopaedic implants has been from solid Titanium or CoCrMo alloys or ceramics, which are many times stiffer than the bone. But bone is a material that responds to strain, and thus these materials have limitations. Exciting new work in our research group has proven that we can make additively manufactured (AM) lattice parts that are the same stiffness as bone, but stronger. In an animal model, we have been able to control bone formation through the strain gradient it experiences. This could be a major breakthrough in orthopaedic implant design. In this PhD we will improve on our pilot findings and demonstrate control of bone strains and fixation for different prototype implant configurations. The project will have AM at its heart, and involve laboratory testing to prove design concepts before taking them to animal trials to validate in vivo.

For background information, see our recent AM publications in Materials & Design (https://doi.org/10.1016/j.matdes.2017.06.041) and Journal of Orthopaedic Research (http://onlinelibrary.wiley.com/doi/10.1002/jor.23771/full), Twitter: @ICbiomechanics, or our group webpage: http://www.imperial.ac.uk/biomechanics-group/

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class or 2.1 honours degree in mechanical engineering or a related subject, and a desire to work in a multidisciplinary team of engineers (both academic and industrial), and orthopaedic surgeons. A passion for engineering, demonstrated by extra-curricular activities or industrial experience is also desirable. Good team-working, observational and communication skills are essential.

To find out more about research at Imperial College London in this area, go to: http://www3.imperial.ac.uk/mechanicalengineering

For information on how to apply, go to: http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/

For further details of the post contact Dr Jonathan Jeffers j.jeffers@imperial.ac.uk +44 (0)20 7594 5471. Interested applicants should send an up-to-date curriculum vitae to Dr Jeffers. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: until post filled

Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people