

**Applications are invited for a PhD studentship for the following project:**

**Using additive manufacturing to print patient specific paediatric stents**

The position will be based with Prof. Caitríona Lally in the School of Engineering within the Advanced Materials and Bioengineering Research Centre (AMBER) centre.

**Summary of project**

Paediatric stents are metal mesh devices that are used to expand the arteries of children that may be restricted due to a congenital defect. In many cases, paediatric stenting is conducted using off-label adult coronary or biliary stents and this can necessitate potentially risky revisions to the device (e.g. cutting the device to shorten it). Consequently, these devices can deliver inferior long-term outcomes for these patients. Stents that are optimised for paediatric patient anatomy would deliver better long-term clinical outcomes and result in improved longer-term health for these children.

Medical imaging, such as computed tomography (CT) and/or magnetic resonance (MR) imaging, is increasingly being used for pre-surgical assessment of the degree of vessel restriction in these patients. Using this patient specific imaging, along with additive manufacturing processes, bespoke devices can be designed and printed efficiently and cost effectively.

The aim of this project is to use advanced numerical optimisation techniques to design patient specific stents and to validate these models using bench-top tests. The project will require vessel image processing and reconstruction, 3D metal and polymer printing of novel materials, and finite element modelling optimisation to develop highly novel patient specific paediatric stents.

For more information please contact Prof. Caitríona Lally ([lallyca@tcd.ie](mailto:lallyca@tcd.ie))

The ideal applicants will have a 2.1 (minimum) Honours Bachelor's degree in Mechanical Engineering, Biomedical Engineering or related discipline. Previous experience in finite element analysis or metal 3D printing would be advantageous but not essential.

How to apply: CVs with the names and addresses of three referees should be submitted to *Prof. Caitríona Lally* [lallyca@tcd.ie](mailto:lallyca@tcd.ie)

Positions will remain opened until filled but preferred start date is *September 2 2020*. Only short-listed applications will be acknowledged.

**This position is funded by AMBER, SFI Research Centre for Advanced Materials and BioEngineering Research & CRANN Institute.** The AMBER research centre, as a community of researchers, welcomes its responsibility to provide equal opportunities for all. We are actively seeking diversity in our research teams and particularly encourage applications from underrepresented groups.