

IMPEE PhD Opportunity

Project title: Patient-specific design of biodegradable porous scaffolds for tissue engineering
Supervisor(s): Dr Y. Chen

Abstract (200 words max):

Scaffolding as a tissue engineering approach has drawn significant attention in bioengineering community in the past two decades. In principle the tissue scaffolds are expected to be porous, biodegradable and able to provide cell-friendly environment for cell growth during the regenerative process. In this regard, design of scaffold microstructure would be crucial therefore must be taken into account in studying such a dynamically- changing tissue-scaffold system. The first part of this project is to develop a computational framework that characterises the bone tissue-scaffold system in vivo, by addressing the microenvironment (both mechanical and biochemical), scaffold biodegradation, interactions with host tissue (acquisition of complicated 3D wound cavity by imaging with different fixation methods; cell migration and mass diffusion), the cellular mechanobiological response and neovascularisation. The established models will then be used as a framework for design optimisation of scaffold microstructures under various mechanical and biochemical criteria.

Requirement

The ideal candidate should be highly-motivated and have experience in computational mechanics or related fields. Prior experience in programming in one or more of the following languages is a plus: Matlab, Python (ABAQUS) or APDL (ANSYS). Good interpersonal skills are needed as successful candidate will be involved in a wider range of researchers of mathematical modellers, material scientists and bioengineers.

Other info

*Applications and informal academic enquiries should be directed to Dr Yuhang Chen (y.chen@hw.ac.uk), with a copy of your current CV and other supporting documents.

Check [Computational Bioengineering Group](#) for more details.