

## BIOMEDICAL ENGINEERING

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**NAME: JOANNA LI**

As a young student, I dreamt of using my passion for design and science to make a difference to the world, but I did not know how. Through my Arkwright Scholarship, and the support of my Sponsor, I was given an opportunity to direct my interests and learn how I could apply my skills in a range of rewarding Engineering careers.

In 2005, I began a Mechanical Engineering MEng degree at Imperial College, not only winning an IMechE Undergraduate Scholarship but also becoming an Arup-sponsored student. I undertook summer placements with Arup, looking at smoke extraction for underground stations in London and ventilation designs for a server cluster in Hong Kong using computational simulations.

My growing interest in the biomedical applications of Engineering led me to write my final year thesis on computational modelling of the mechanical behaviour of knee soft tissues.

After graduating I moved to the Arthritis Research UK Research Centre at the University of Cardiff where my PhD focused on issues

relating to the generation and validation of patient-specific finite element knee models using a mixture of computational, experimental and imaging methods. My work in this area has won several awards, including the Worshipful Company of Engineers Mercia Award and the South Wales Institute of Engineers Educational Trust David Douglas Award.

I really enjoy the academic way of life and I am now a post-doctoral researcher, back at Imperial College, researching the micro-mechanics of composite materials. This involves the use of experimental studies and finite element analysis to characterize the mechanical behavior of the individual constituents, as well as, analytical methods to account for the inhomogeneities in the composite mixture.

I get a real sense of reward from being able to use my interest in Engineering to conduct research that could improve people's personal health. My Arkwright Engineering Scholarship helped set me on the path to achieving this.

### PERSONAL PROFILE:

Scholarship Awarded  
2002 – 2004

### ARKWRIGHT SPONSOR:

Lloyd's Register Foundation

### A LEVELS:

Maths, Physics, Chemistry,  
Design & Technology, Chinese

### UNIVERSITY:

Imperial College, London.  
MEng Mechanical Engineering,  
Upper Second Class Honour

### CURRENT POSITION:

Post-doctoral researcher  
Imperial College London

A finite element model of  
the knee reconstructed  
from MRI scan data



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