

Title

Solving Musculoskeletal Issues using Engineering Approaches

Presenter

THIAN Eng San, PhD FIMMM FRMS
Assistant Professor
Department of Mechanical Engineering
National University of Singapore
Singapore

Principal Investigator

Centre for Biomedical Materials Applications & Technology (BIOMAT)
National University of Singapore
Singapore

Synopsis

Innovative work in clinical validations of all types of bone grafts has so far, improved the patient's life quality. Often, patients have to take antibiotics, anti-inflammatory and/or immune-suppression drugs through oral administration after post-surgery, and this effect has lowered the graft's quality with time. To the patients and clinicians, the ability to deliver a bone graft that can heal rapidly, and to function over the patient's remaining entire life, is strongly desired. This challenge is likely to increase in the next few decades with the ageing population. As such, there is an urgent need to focus on the efficacy of patient-centered care for musculoskeletal disease. In this talk, the usage of a novel engineered tubular tendon graft implant that not only recreates the complex three-dimensional architecture of the tendon to allow cells to orientate and form matrix in specific microstructural architecture, but also possesses mechanical properties similar to that of the native tendon, will be presented. This future healing process will certainly bring new opportunities to the regenerative medicine.

Biography

Dr. Thian Eng San is currently an Assistant Professor in the Department of Mechanical Engineering and a Principal Investigator in the Centre for Biomedical Materials Applications & Technology (BIOMAT) at National University of Singapore (NUS). He is also a fellow of the Institute of Materials, Minerals and Mining (FIMMM), and the Royal Microscopical Society (FRMS). Prior to joining NUS, he worked as a Faraday Research Associate in the Cambridge Centre for Medical Materials, UK under Professor William Bonfield. Trained as a biomaterial scientist, he gained a broad knowledge at the interface of materials science and biotechnology, relating to biomedical applications. Areas of his research work include (but not limited to) nanobiomedical materials, chemically-modified apatites, composites for biomedical engineering, surface modification, and tissue engineering.

Dr. Thian has received several awards including the Bechtel Gold Medal, Armourers & Brasiers' Company Award, and Institution of Mechanical Engineering Best Ph.D Thesis in Bioengineering Award. Dr. Thian is engaged in internationally leading research addressing some of the global healthcare challenges, with a total research income of over S\$7 million from various sources. He has made major contributions to the biomaterials field and in particular, for musculoskeletal repair, having authored more than 80 journal papers, conference papers and book chapters; and also a member of the reviewer board of several major biomaterials journals.