

SINGA Awards – IHPC Projects

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Research Area/ Theme			
<p>Finite element modelling Molecular dynamics simulations Mechanical properties of carbon nanotube-based structures Mechanical properties of soft materials and biological cells Epitaxial growth of thin films and surface structures</p>			
Proposed Project Title:	Mechano-electrochemical behaviour of hydrated-charged connective soft materials		
<i>Please provide a short write-up of the proposed project (s)</i>			
<p>Within the past decade, significant advances have been made in mechano-electrochemical behaviour of hydrated-charged connective soft materials, such as articular cartilage. The focuses have been on their nonlinear and viscoelastic behaviours, depth-dependent inhomogeneity and property anisotropy. The research findings have provided many insights into the structure-function relationship in hydrated-charged connective soft materials.</p> <p>The biomechanics of hydrated-charged connective soft materials is of great importance in biomedical applications. For example, the cartilage biomechanics plays an important role in the generation and maintenance of articular cartilage, as well as regeneration of diseased articular cartilage. Cartilage tissue engineering constructs must be able to function in the highly loaded environment of diarthrodial joints for many years. Hence the development of a biomechanical theory of hydrated-charged connective soft materials with appropriate, experimentally validated constitutive relations will play in crucial and indispensable roles in understanding and constructing hydrated-charged connective soft materials.</p>			