[ABSTRACT of seminar on 2 Nov. 2016]

Bio-inspired Design and Fabrication in Mechanical Engineering

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Nature has developed a large variety of mechanical structures. These structures have been optimized to fit their environments for a long time. For instance, eagle’s wings are optimized for flight. And the spider web is optimized for catching prey. If we use these structures for engineering and science, we can open up great opportunities for building high-performance devices.

The seminar will cover several latest bio-inspired design and fabrication based on mechanical engineering. Firstly, ‘ultrasensitive mechanical crack-based sensor inspired by the spider sensory system’ will be presented with fundamental working principle, unique characteristics, and several practical applications. Second, ‘shape-controllable microlens arrays inspired by brittle star light harvesting system’ will be introduced with its unique light focusing effect. Third, ‘skin-like, wearable microfluidic systems capable of capture, storage and colorimetric sensing of sweat’ will be explained with several interesting examples of practical application in scientific and industrial fields.