**Conducting Polymer Hydrogel for Advanced Electronics**

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Hydrogels are cross-linked polymer with a three-dimensional (3D) structure, which can absorb large quantities of water without dissolving. Among them, conducting polymer hydrogels (CPHs) represent a unique class of materials that synergize the advantageous features of organic conductors and hydrogels, which have been used in many applications such as bioelectronics and energy storage devices.

Conductive polymer hydrogel exhibited attractive features for electronic applications, for example: (a) high conductivity; (b) good biocompatibility due to its similarity to extracellular environment; (c) CPHs can be used as a processing platform for fashion conducting polymer into porous and 3D structured thin films due to the *in situ* solution gelation and microstructure formation process; (d) the simple chemistry of CPHs synthesis is compatible to fast and low cost patterning fabrication such as screen printing and inkjet printing; (e) CPHs can be used as advanced interface between soft and hard materials; (f) CPHs can interface between ion transport phase and electron transportation phase, and low the impedance.

In this talk, we provides a brief overview of current research activities in the synthesis, processing and electronic device of three-dimensional (3D) nanostructured CPHs, and their applications in bioelectronic, energy storage and electronic skin devices.

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