

Biocompatible conductive polymers with high conductivity and high stretchability**Speaker:** He Hao

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Date: 14th Nov 2019, Thursday
Time: 3:00 to 3:30 pm
Venue: EA-06-05

Abstract

Stretchable electronic materials have drawn strong interests due to their important applications in areas such as bioelectronics, wearable devices and soft robotics. Stretchable electrode is an integral unit of stretchable systems. Intrinsically conductive polymers like poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) (PEDOT:PSS) can have high mechanical flexibility and good biocompatibility. But their electrical conductivity and mechanical stretchability should be greatly improved for their applications as stretchable electrode. Here, we demonstrate highly conductive and highly stretchable PEDOT:PSS by incorporating a biocompatible polyol. It can serve as both secondary dopant and plasticizer for PEDOT:PSS. It can not only significantly improve the conductivity but the stretchability as well. The mechanism for the stretchability improvement by D-sorbitol is ascribed to the softening of PSSH chains. D-sorbitol can position among the PSSH chains and thus destructs the hydrogen bonds among the PSSH chains. This makes the conformational change of the PSSH chains under stress become easy and thus increases the mechanical flexibility of PEDOT:PSS.

He Hao received his Bachelor's degree in the Department of Materials Science and Engineering in Zhejiang University. He is currently a Ph.D. candidate in the Department of MSE under the supervision of Prof. Ouyang Jianyong, focusing on stretchable electronics and thermoelectrics. His current research focuses on stretchability enhancement of the conductive polymer.

ALL ARE WELCOME!

Host: A/P Xue Junmin