

“Design, synthesis and application of mechanically robust self-healing polymers”

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Venue: Room G5-317, 5/F , Yeung Kin Man Academic Building

Abstract

Development of self-healing polymers with autonomous self-healing capability and good mechanical performance is highly desired. However, for most self-healing materials, there is often a trade-off between mechanical properties and dynamic healing: strong bonds result in mechanically robust but less dynamic systems, precluding autonomous healing, while weak bonds afford dynamic healing, but yield relatively soft materials. Therefore, it is highly challenging to realize self-healing in mechanical robust materials. Herein we present our strategies on the design, synthesis and application of mechanical robust self-healing polymers. We obtained a series of self-healing polymers with excellent mechanical properties (highly stretchable or rigid). We studied the structure-property relationships of self-healing materials by utilizing various methods such as MASS, NMR and single molecule force spectroscopy. We also investigated the applications of self-healing materials in 3D printing, super glue, orthopedic immobilization, shape memory and photo-electronic devices.

About the Speaker

Prof. Cheng-Hui Li obtained his B.Sc. in Environmental Engineering at Nanchang University in 2002, and got his Ph.D. in inorganic chemistry at Nanjing University in 2007. In 2005.6–2006.6 and 2008.6–2008.12, he worked as a research assistant at The University of Hong Kong with Prof. Chi-Ming Che. In 2013, he worked with Prof. Zhenan Bao at Stanford University as a visiting scholar. He is now Associate Professor in School of Chemistry and Chemical Engineering, State Key Laboratory of Coordination Chemistry, Nanjing University. His research focus on functional coordination complexes and self-healing materials based on coordination bonds.

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All are welcome !