

## Flexible Energy Storage and Zinc Based Batteries

Our research focuses on development of flexible energy storage/conversion devices, including supercapacitors, aqueous electrolyte batteries and metal air batteries. We will introduce an extremely safe and wearable solid-state zinc ion battery (ZIB) comprising a novel gelatin and PAM based hierarchical polymer electrolyte (HPE) and an  $\alpha\text{-MnO}_2$  cathode. Benefiting from the well-designed electrolyte and electrodes, the flexible solid-state ZIB delivers a high areal energy density and power density, high specific capacity and excellent cycling stability. More importantly, the solid-state ZIB offers high wearability and extreme safety performance over conventional flexible LIBs, and performs very well under various severe conditions, such as being greatly cut, bent, hammered, punctured, sewed, washed in water or even put on fire. In addition, our recent progresses on development of ZIBs, including the zinc ion storage mechanism in cathode and stability study of zinc anode will be also introduced.



### Biography

Dr. Chunyi Zhi obtained his PhD degree in physics from institute of physics, Chinese Academy of Sciences. After that, he worked as a postdoctoral researcher in National Institute for Materials Science (NIMS) in Japan, followed by a permanent position in NIMS as a senior researcher. He is currently an associate professor in Department of Materials Science & Engineering, City University of Hong Kong. Zhi's research focuses on flexible/wearable energy storage devices and zinc-based batteries etc. He has published more than 280 peer-reviewed papers and been granted more than 80 patents. Zhi is highly cited researcher in materials science (2019) and fellow of the Hong Kong Young Academy of Sciences. He is also founder of Amazinc Energy Ltd. and has received numerous professional awards for his contributions to flexible energy storage.