Special Issue

Advances in Piezoelectric Polymer Materials for Multifunctional Devices

Message from the Guest Editors

Piezoelectric polymers and their composites could be utilized in next-generation flexible electronics due to their capacity for energy harvesting, mechanical flexibility, and inexpensive fabrication process. In recent years, their applications have extended beyond simple strain sensing and now include multifunctional uses in energy harvesting, health monitoring, soft robotics, smart textiles, and wearable electronics. Recent advancements in piezoelectric polymer composites, achieved through the incorporation of conductive, dielectric, or piezoelectric fillers, have significantly enhanced their dipole alignment, self-polarization, and sensitivity. Additionally, their compatibility with scalable fabrication techniques and biocompatibility make them particularly suitable for emerging biomedical and IoT-integrated systems. Innovations in multilayered architectures, stretchable substrates, and hybrid MEMS continue to broaden their scope, presenting new applications across diverse technological domains.

This Special Issue aims to highlight recent advances in the synthesis, processing, characterization, and application of piezoelectric polymer materials and their composites.

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