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# Polymer Nanocomposite Dielectrics for Energy Storage and Electrocaloric Effect

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Deadline for manuscript submissions: closed (30 March 2024)

### Message from the Guest Editor

Polymer-ceramic matrix composites or composite dielectrics with electrocaloric effect have been attracting intensive attention an alternative refrigeration as mechanism compared to conventional compressor-based refrigerators and air conditioners, where polymer-ceramic matrix composites integrating the merits of ferroelectric polymers with high breakdown strength and ferroelectric ceramics with desired dielectric permittivity achieve the largely enhanced electrocaloric effect performance. Therefore, high performance electrocaloric effect will focus on deciding high piezoelectricity ferroelectric ceramic filler, polymer matrix, and high thermal conducting filler to fabricate polymer-ceramic matrix composite dielectrics. To successfullv accomplish the design of highperformance polymer-ceramic matrix composite dielectrics and electrocaloric effect cooling devices for advanced refrigeration system/equipment, crucial research directions in terms of material synthesis, structural configuration, property characterization and device/chip integration are either individually studied or systematically considered in polymer-ceramic matrix composites.









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