Large Caloric Effects in Ferroelectric Polymers and Liquid Crystal Elastomers

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The recent findings of large electrocaloric in relaxor ferroelectric polymers have attracted great interest for developing new cooling technology that is more environmentally friendly than the existing cooling technologies [1,2]. A review of recent electrocaloric and elastocaloric results obtained in polymeric ferroelectric [2,3] and liquid crystal elastomer materials [4], respectively, will be given. Direct measurements indicate that the elastocaloric response of similar magnitude as electrocaloric response in ferroelectric polymers could be found in main-chain liquid crystalline elastomers [4]. Both soft materials could play significant role as active cooling elements and parts of thermal diodes or regeneration material in development of new cooling devices.

References:

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