

Looking for Improved Caloric Responses with Ferroelectrics

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The search for alternative solid-state refrigeration materials to hazardous gases in conventional and cryogenic cooling devices is a very active field of condensed matter [1, 2]. The use of phase transitions is a powerful tool to achieve giant caloric effects in ferroic materials in which magnetization, polarization, strain and/or volume can be strongly tuned under a moderate external stimulus. Here, we explored various strategies to reveal ferroelectric potentialities as solid state coolers such as multiphase points composition, elasto- and barocaloric responses, negative electrocaloric effect in antiferroelectrics as well as the use of dual-stimuli by taking advantage of multicaloric effects combining stress and electric field in ferroelectrics or magnetic and electric fields in multicalorics [3-7].

References

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