

Room Temperature Electrocaloric Effect in Layered Ferroelectric CuInP2S6 for Solid State Refrigeration

Overview

This featured article highlights how the FERGIE (now IsoPlane 81) system is being utilized in material science research. Researchers from Birck Nanotechnology Center, Perdue University report on the electrocaloric effect (ECE) of a new electrocaloric (EC) material CIPS, which is CuInP2S6. EC materials are potentially useful for EC refrigerators. These EC refrigerators have low noise and are environmentally friendly. They are also able to be scaled down to small dimensions leading to nanorefrigerators. Thus, ECE is promising for future cooling applications, especially in the micro- to nanoscale such as on-chip cooling.

The researchers characterized their novel material via temperature dependent Raman spectroscopy, utilizing a 100x 0.75NA objective integrated to FERGIE system. A single mode fiber coupled 532 nm laser with a <1 MHz bandwidth was used as the excitation source.

Featured Paper/ Publication: <https://arxiv.org/abs/1901.06616>

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