Open Questions with PAL30 and Homologs

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Though **PAL30** has been well characterized by our study, there are several open questions that remain for me— some of which are specific to **PAL30**, and some of which are more general to the implications of the phases that we discovered.

Specific Questions

Polarization Current vs. Optical Tilt

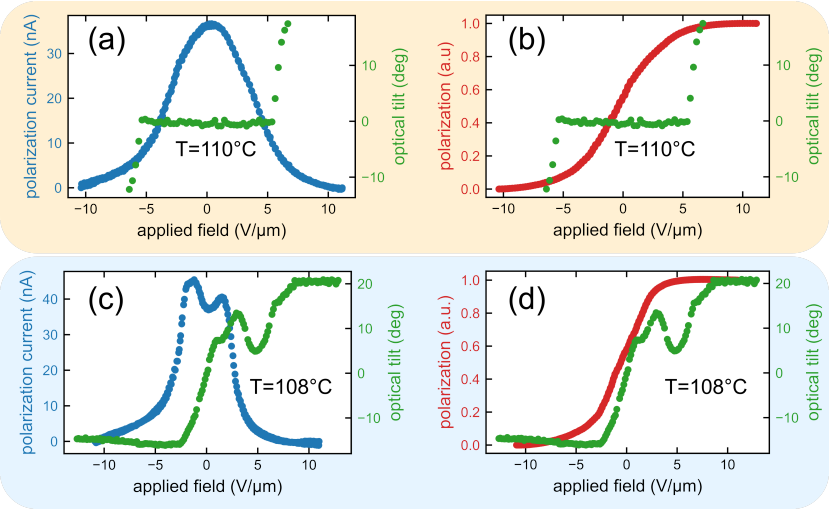

Figure 1: Polarization and optical tilt of **PAL30**phi for 110 °C and 108 °C. (a) The polarization current (PC) and the optical tilt for **PAL30** at 110 °C, revealing that the polarization reorients in a Langevin-like process, and once saturates the tilt then reorients. (b) The cumulative integral of the PC, $P(E) \propto \int_{E'=0}^{E'=E} dP/dE'dE' + A$, should be proportional to the total polarization, with offset A, plotted with the optical tilt at 110 °C, confirming that the polarization saturates before the tilt begins to move. (c) The PC and the optical tilt for **PAL30** at 108 °C, showing that the tilt moves linear with the polarization, but that there appears to be remants of the 110 °C reorientation process (Langevin-like polarization with thresholded tilt alignment). (d) The net polarization plotted with the optical tilt at 110 °C, confirming that the polarization *and* tilt reorient linearly with applied field, but is also accompanied by a signitude that is reminiscient of the 110 °C.

Model for Polar Switching

Model for Helical Flucuations

Structure-property Relations

General Questions

Onset of Chirality

Bent-Core vs. Calamitic

Point-Group Chirality vs Ensemble Chirality