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The discovery of intrinsic magnetism in atomically thin sheets of chromium iodine (CrI_3) fuels the search for related layered materials, to gain a better understanding in the emergence of magnetic properties and to find new candidates for future applications ranging from sensors and data storage to refrigeration.

Here, users of PARADIM explored the rich phase space of chromium and tellurium (Cr, Te). The CrTe_2 endmember is a layered dichalcogenide, with a series of interstitially ordered Cr rich phases, $\text{Cr}_{2+x}\text{Te}_4$. Using PARADIM's capabilities in single crystal growth, the group realized CrTe_2 , $\text{Cr}_{1.27}\text{Te}_2$, Cr_2Te_3 , and Cr_3Te_4 and subsequently characterized the materials properties, reported across several works.

Cr_2Te_3 is found to have a large, and highly anisotropic magnetocaloric effect at its magnetic phase transition temperature of $T = 170$ K. Since it is known that the magnetic ordering temperature increases to $T = 280$ K in the thin film limit, the PARADIM users conclude that Cr_2Te_3 , with further chemical tuning, holds great promise as a thin film, room temperature, magnetocaloric for integration into electronic and solid-state devices.

- A. Goswami, *et al.* [Phys. Rev. B **109**, 054413 \(2024\)](#).
A. Goswami, *et al.* [ACS Appl. Electron. Mater. **6**, 4043–4056 \(2024\)](#).
A. Goswami, *et al.* [J. Chem. Phys. **160**, 214704 \(2024\)](#).
A. Goswami, *et al.* [J. Appl. Phys. **137**, 043909 \(2025\)](#).

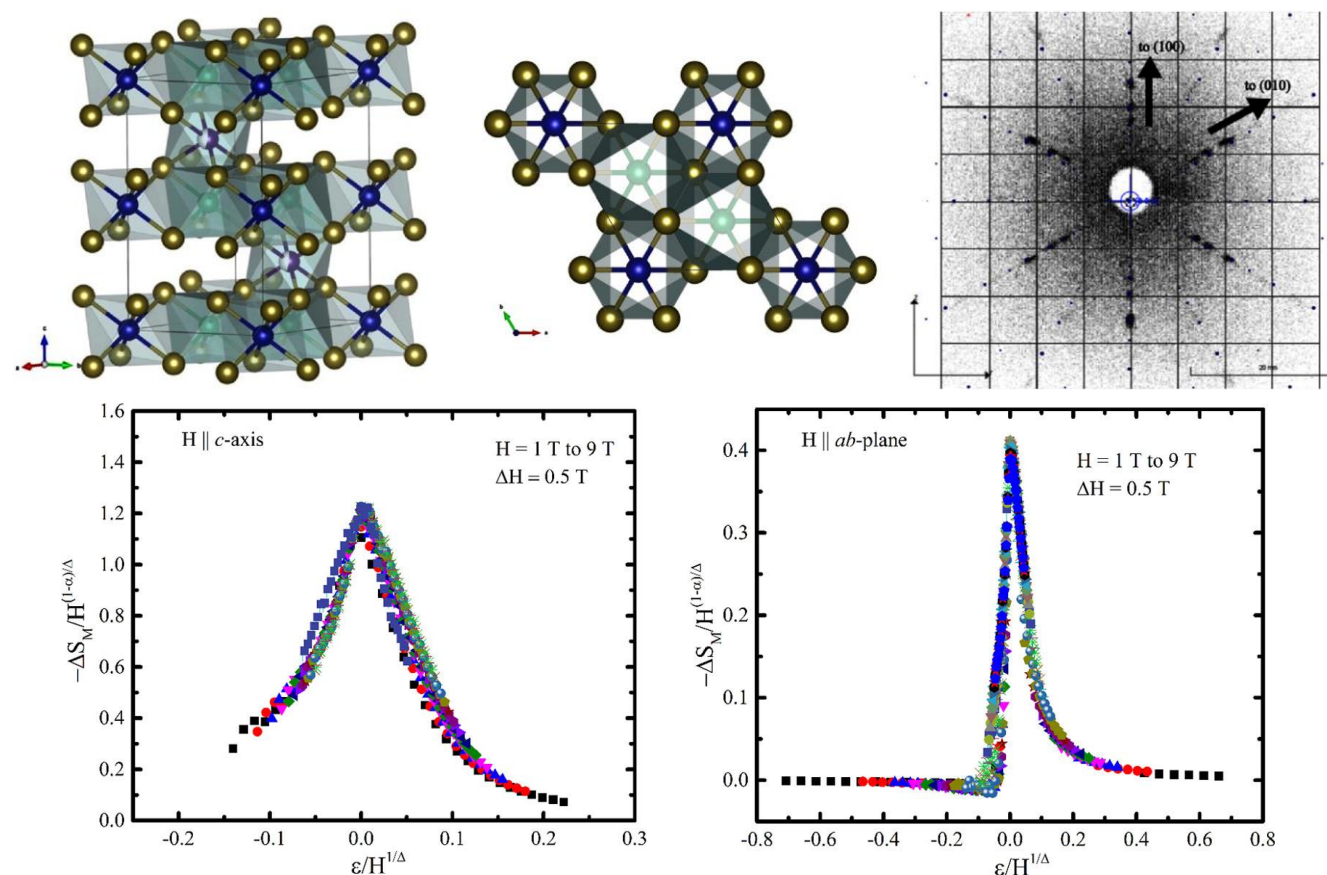


Figure: (Top) Three-dimensional and polyhedral views of the refined crystallographic unit cell and Laue diffraction image of the single-crystal Cr_2Te_3 sample. (bottom) Scaling of change of magnetic entropy curves: $-\Delta S_M/H^{(1-\alpha)/\Delta}$ vs $\epsilon/H^{1/\Delta}$ along the (a) c -axis and (b) ab -plane.