**Poster Presentation**

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*Contrasting compressibility trends in layered structures Ag(tcm) and Ni(CN)2*

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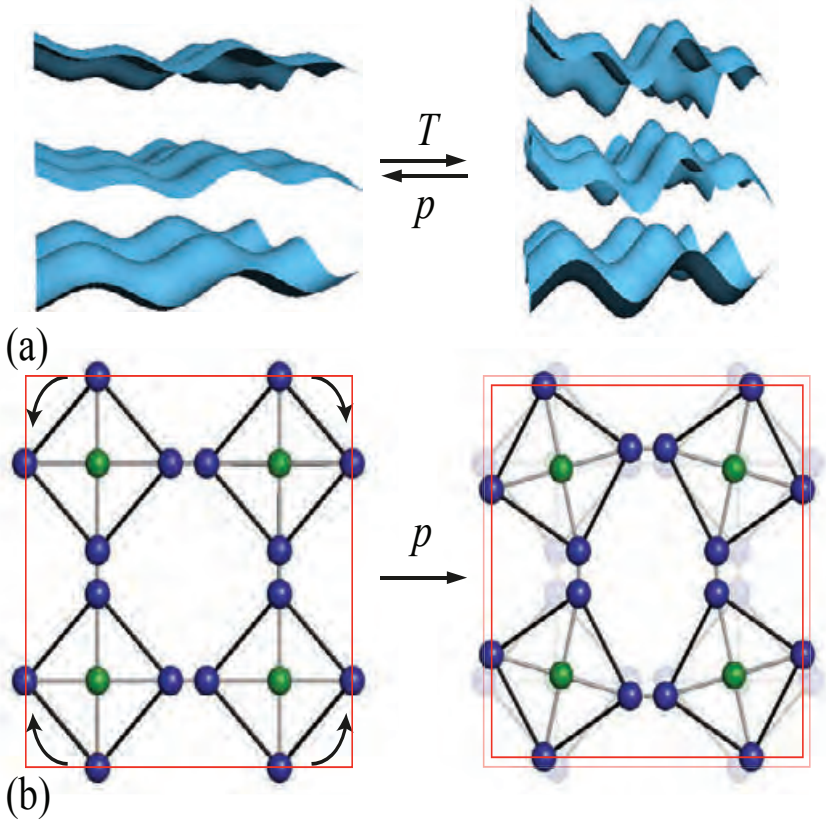
Ag(tcm) (tcm = tricyanomethanide) and Ni(CN)2 are layered structures. Both these materials exhibit area negative thermal expansion (area-NTE) due to 'rippling' of the layers - a displacement pattern that causes the interlayer separation to increase and the effective layer area to decrease (Fig. 1a). We have shown that Ag(tcm) shows negative area compressibility (NAC) under hydrostatic pressure. The latter can be attributed to the rippling phenomenon: when hydrostatic pressure is applied, the effective layer area increases (Fig. 1a). On the contrary, Ni(CN)2 shows shows positive linear compressibility in all directions, albeit much more strongly along the stacking axis than in any direction parallel to the square-grid sheets. This is attributed to transverse phonon modes within the Ni(CN)2 sheets, which can be visualised as 'tilting' of the rigid unit modes (RUMs) (Fig. 1b). A discussion of relating such behaviour to the Grüneisen parameters is undertaken in this study.

***[1]*** *A. L. Goodwin, D. A. Keen and M. G. Tucker, Proc. Natl. Acad. Sci. U. S. A., 2008, 105, 18708–18713,* ***[2]*** *A. B. Cairns, J. Catafesta, C. Levelut et al., Nat. Mater., 2013, 12, 212–216*

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