

Negative area compressibility in silver(I) tricyanomethanide†

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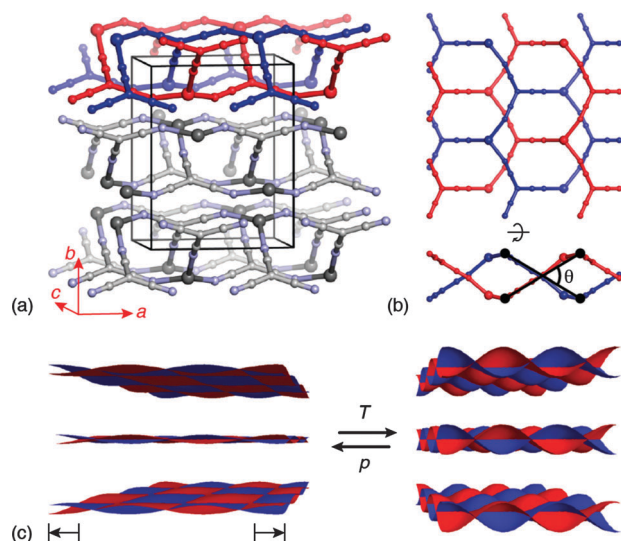


Fig. 1 (a) The crystal structure of Ag(tcm) is composed of stacked, doubly-interpenetrating (6,3)-nets in which both Ag^+ (large spheres) and tcm^- ions (smaller spheres) function as trigonal nodes. (b) The

of NAC quantified by the corresponding area compressibility $K_{(010)} = K_a + K_c = -7.5(8) \text{ TPa}^{-1}$.

Conventional engineering materials (e.g. iron) have linear compressibilities $K \sim 5 \text{ TPa}^{-1}$ that correspond to a decrease of ca. 0.5% in length for each 1 GPa pressure increase;²⁵ consequently, the NAC behaviour of Ag(tcm) is essentially as strong as the positive area compressibility of these 'normal' phases. Moreover, despite the fact that the orthorhombic symmetry of Ag(tcm) allows for different behaviour in the a and c directions, we find that both its compress