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High pressure study on ZnCr2S4 spinel YUEJIAN WANG, ILIAS EFTHIMIOPOULOS, THOMAS LOCHBILER, Oakland University, VLADIMIR TSURKAN, ALOIS LOIDL, University of Augsburg — We have performed structural and vibrational studies on the magnetically frustrated ZnCr2S4 spinel under high pressure up to 42 GPa. The starting materials crystallize in a cubic phase with space group *Fd-3m*. Upon pressure increasing, two reversible structural transitions were observed at 22 GPa and 31 GPa, respectively. The first high-presure phase is identified as a tetragonal $I41/amd$ phase, whereas the second pressure-induced transition is attributed to an orthorhombic distortion of the tetragonal cell. We also detected the presence of a secondary (minority) high-pressure phase in those high pressure phases. Careful inspection of the starting *Fd-3m* phase revealed a previously unnoticed isostructural transition, which is intimately connected with changes in the electronic properties. Finally, close comparison with the behavior of relevant Cr-bearing chalcogenide spinels revealed that the *Fd-3m*$\rightarrow$ $I41/amd$ transition pressure depends on the ratio of the magnetic exchange interactions active in these systems, i.e. it appears to originate from a spin-driven Jahn-Teller effect.

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