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Uniaxial Pressure Control of Charge Density Wave in ScV6Sn6

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Uniaxial Pressure Control of Charge Density Wave in ScV6Sn6

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ScV6Sn6 is a bi-layer Kagome system in which the structural degrees of freedom in the out-of-plane direction are suggested to play a major role in the stabilization of the charge density wave (CDW) order [1-3]. Here, we investigate the effects of uniaxial pressure along the *c* axis in this material. Our electrical resistivity measurements under *c*-axis uniaxial stress reveal a fast suppression of the CDW transition followed by a change in the CDW character at 0.9 GPa. In contrast, our x-ray diffraction measurements show that at near-zero stress, CDW reflections are initially enhanced by *c*-axis compression, with suppression occurring beyond 0.05 GPa. Our findings highlight the importance of the *c*-axis lattice parameter for the tuning and stabilization of the CDW order in this material.

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2. K. Wang, S. Chen, S.-W. Kim, and B. Monserrat, Origin of competing charge density waves in Kagome metal ScV6Sn6, *Nat. Commun.* 15, 10428 (2024).
3. G. Pokharel, B. R. Ortiz, L. Kautzsch, S. J. Gomez Alvarado, K. Mallayya, G. Wu, E.-A. Kim, J. P. C. Ruff, S. Sarker, and S. D. Wilson, Frustrated Charge Order and Cooperative Distortions in ScV6Sn6, *Phys. Rev. Materials* 7, 104201 (2023).

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