**Poster-1-13**

# Disorder to tune the interplay between charge density wave and superconductivity in 2H-TaS2

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We report on the preparation and the physical properties of bulk disorder 2H-TaS2. The disorder level is controllable manipulation by tuning the interlayered lithium content of LixTaS2. We systematically investigated the influence of disorder on charge-density-wave (CDW) and superconductivity and reveal the underlying interactions that give rise to them in disorder 2H-TaS2. Dome-shaped behavior was uncovered in disorder dependence of superconductivity toward the lithium controlled-TaS2, with Tc enhanced from 1.9 to 3.91 K when below critical disorder level. The corresponding Sommerfeld constants $\gamma$ parameter evaluates the electron density of states DOS(EF) at the Fermi level as functions of disorder level, indicating the weakened CDW order results in a substantial increase of the density of states at the Fermi energy, boosting superconductivity.

[1] H. Liu, etc. Phys. Rev. B 104, 064511 [2] H. Liu, etc. arXiv:2202.07725.