**the NANO-textured phase OF 1T-TaS2 PROBED BY OPTICAL CONDUCTIVITY**

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High-temperature, nano-textured phase of 1T-TaS2 is a peculiar near commensurate charge density wave (NCCDW) phase in which nanometer-sized, roughly hexagonal patches, of commensurate charge density wave (CCDW) are separated by, more or less triangular metallic pieces. [1]

In pure 1T-TaS2 around 180 K, a transition to a commensurate-CDW/Mott state occurs. This transition can be suppressed by pressure or by intercalation, and the sample remains in the non-metallic NCCDW state down to very low temperatures, where it turns superconductive.[2] Surprisingly, the temperature of the superconducting transition is pressure independent, even though the resistivity changes by orders of magnitude[3]. This suggest that superconductivity arises in triangular metallic parts, while DC conductivity is dominated by weak links between them.

In order to examine more closely the evolution of the NCCDW phase in temperature and gain more information about the two components of the NCCDW phase we have studied a pure and intercalated 1T-TaS2 samples by optical conductivity measurements. We report the reflectivity measurements in the temperature range from 23 K to 290 K, over a frequency range of 30 cm-1 - 37000 cm-1 as well as the optical conductivity derived through Kramers-Kronig analysis.[4]

In both compounds we observe a single, wide metallic contribution, extending to 400 cm-1, on the top of which the phonon contribution shows above 40 cm-1. This suggests that the largest contribution to optical conductivity also comes from connections between conducting areas. However, comparison of the two set of data allows us to discuss the fine differences between the two nano-textures.

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