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Chiral Charge Density Wave and Superconductivity in Cu_xTiSe_2 Single Crystals[1] GORAN KARAPETROV, P. HUSANIKOVA, Drexel University, V. CAMBEL, IEE, Sloval Academy of Sciences, Bratislava, Slovakia, P. SZABÓ, P. SAMUELY, IEP, Slovak Academy of Sciences and Šafárik University, Kosice, Slovakia, J. FEDOR, M. IAVARONE, Temple University, Philadelphia — We investigate atomic scale scanning tunneling microscopy and spectroscopy in Cu_xTiSe_2 single crystals at low temperatures. We map the CDW and superconducting phase diagram as a function of copper doping. STM measurements reveal coexistence of chiral charge density wave and superconductivity. In case of optimally doped and overdoped cases we find that the amplitude of charge density wave modulation is strongly suppressed with respect to strongly underdoped case ($x < 0.06$) with the chiral domain size remaining approximately the same. Superconductivity exhibits BCS character at variety of dopings with $2\Delta/kT_c \sim 3.6 \div 3.7$ indicating an intermediate coupling strength. Application of the external magnetic field introduces the Abrikosov vortex lattice that is weakly pinned. The size of the vortex core extracted from vortex images corresponds to the one extracted from the magnetization measurements. Our results suggest that, if charge density wave quantum critical point exist, it should be well above the optimal copper concentration of x=0.08.

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