

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Electronic Properties of  $\text{Cu}_x\text{TiSe}_2$  Single Crystals**<sup>1</sup> PETRA HUSANIKOVA, Drexel University and IEE, Slovak Academy of Sciences, JAN FEDOR, JAN DERER, VLADIMIR CAMBEL, IEE, Slovak Academy of Sciences, GORAN KARAPETROV, Drexel University — We investigate the normal state and superconducting properties of 1T-TiSe<sub>2</sub> family of single crystals intercalated with different level of copper content. Magnetoresistance and Hall effect data indicate that 1T-TiSe<sub>2</sub> is a compensated narrow band-gap semiconductor or semimetal with small number of electron and hole carriers. We compare the influence of copper intercalant and titanium interstitials on the temperature evolution of charge density waves via resistivity and Hall effect measurements. Our findings indicate that the origin of the charge density waves in 1T-TiSe<sub>2</sub> is due to the combination of exciton and Jahn-Teller mechanisms. At higher copper concentrations we investigate the superconducting properties of  $\text{Cu}_x\text{TiSe}_2$  in overdoped regime and find that the system is a single-gap strongly type-II superconductor with in-plane Ginzburg-Landau parameter reaching 50.

<sup>1</sup>This work has been supported by Slovak Grant Agency APVV, project APVV-0036-11 (0.2), and by the Research & Development Operational Program funded by the ERDF, "HD Video", ITMS code 26240120043 (0.6) and "CENTE II", ITMS code 26240120019 (0.2).

Goran Karapetrov  
Drexel University

Date submitted: 06 Nov 2012

Electronic form version 1.4