

Revisited low temperature structure of κ -(BEDT-TTF)₂Cu[N(CN)₂]Cl

Pascale Foury-Leylekian,¹ Vita Ilakovac^{2,3}, Pierre Fertey⁴, V. Balédent¹, J.-P. Pouget¹, S. Tomic⁵,

¹*Laboratoire de Physique des Solides, CNRS, Université Paris-Saclay 91405 Orsay cedex, France, e-mail: pascale.foury@universite-paris-saclay.fr*

²*Sorbonne Universités, UPMC, Université Paris 6, CNRS UMR 7614, Laboratoire de Chimie Physique–Matière et Rayonnement, Paris, France*

³*Université de Cergy-Pontoise, F-95031 Cergy-Pontoise, France*

⁴*Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin, Boîte Postale 48, F-91192 Gif-sur-Yvette, France*

⁵*Institut za fiziku, P.O. Box 304, HR-10001 Zagreb, Croatia*

The organic charge transfer salts κ -(BEDTTTF)₂X are Mott insulators due to Coulomb interactions between electrons [1]. The observed rich phenomenology of ground states, from superconducting to Antiferromagnet and ferroelectric phases [2–3], is due to the highly tunable nature of the correlation strength of the charge carriers, their strong coupling to vibrational modes of the crystal lattice and the underlying presence of disorder in the ethylene groups. This disorder is expected to tune the metal insulator transition observed under pressure and thus the superconducting phase [4]. In κ -(BEDT-TTF)₂Cu[N(CN)₂]Cl (Ket-Cl), no exact structure was determined at low temperature to investigate accurately the effect of the disorder on the electronic properties. In this work, we present a recent synchrotron measurement of the exact structural properties of the Ket-Cl at 17 K.

References

- [1] M. Imada, A. Fujimori, and Y. Tokura, *Rev. Mod. Phys.* **70**, 1039 (1998).
- [2] N. Toyota, M. Lang, and J. Müller, *Low-Dimensional Molecular Metals* (Springer, 2007).
- [3] B. J. Powell and R. H. McKenzie, *Rep. Prog. Phys.* **74**, 056501 (2011)
- [4] B. Hartmann et al, *PHYSICAL REVIEW B* **90**, 195150 (2014)