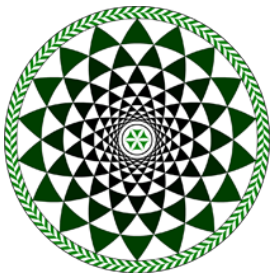

Contribution ID: **22** Type: **poster presentation**

Low temperature electronic state of β"-type organic conductors

Tuesday, 4 July 2017 19:10 (2 hours)

To elucidate mechanisms of unconventional superconductivity has been one of the most important subjects in material science. The mechanisms of unconventional superconductivity occurred in high-T_c cuprates, heavy fermion, organics, and so on, are not clarified at present. In this study, we investigated into low temperature electronic state of β"-type organic superconductors from a viewpoint of charge fluctuation because some β" -type compounds which have strong electronic correlation show charge ordered state by inter-site Coulomb repulsion. Some recent studies imply that the degree of freedom of charge is important for the emergence of the superconductivity in these salts. However, the detailed mechanism is still open question. The arrangement of the donors in the β"-type salts provides semimetallic nature due to the weak tetramerization of the BEDT-TTF molecules along b-axis. Thus, the compounds have very Fermi pockets which have comparatively light effective mass.

In this work, we measured electric transport, magnetic susceptibility and heat capacity of some β"-type salts. We found that the compounds which have weaker chemical pressure show higher critical temperature to superconducting state and large negative magnetoresistance. From the results of Shubnikov-de Haas quantum oscillation, we noticed that the effective mass m^* and the number of carrier of semi-metallic Fermi surface show the chemical pressure dependence. This dependence indicates that the chemical pressure has control of the electronic correlation. Beside that, magnetic field dependence of electronic heat capacity coefficient shows quite unusual dependence implying competition between superconductivity and charge ordered state.

Primary author: Mr IMAJO, Shusaku (Department of Chemistry, Graduate School of Science, Osaka University, Toyonaka, Osaka, Japan)

Co-authors: Dr MORRITT, Alexander L. (School of Science and Technology, Nottingham Trent University, Nottingham, UK); Dr AKUTSU, Hiroki (Department of Chemistry, Graduate School of Science, Osaka University, Toyonaka, Osaka, Japan); Dr MARTIN, Lee (School of Science and Technology, Nottingham Trent University, Nottingham, UK); Prof. NAKAZAWA, Yasuhiro (Department of Chemistry, Graduate School of Science, Osaka University, Toyonaka, Osaka, Japan)

Presenter: Mr IMAJO, Shusaku (Department of Chemistry, Graduate School of Science, Osaka University, Toyonaka, Osaka, Japan)

Session Classification: Poster Session

Track Classification: Multifunctional materials