

45th RAP Seminar

The 45th Seminar on RIKEN Center for Advanced Photonics

Language: Japanese

Date: **July 14 (Fri) 15:30 - 16:30, 2017**

Location: **1F Seminar Room, RIKEN Sendai Campus**

(理研 仙台地区 1階セミナー室)

Wako Campus: Cooperation Center, 3F, W319, TV relay

(和光：研究交流棟3階会議室 W319 (TV会議))

Title: **Dressed charge state with driving light field
in strongly correlated organic materials**

単一サイクル赤外光がつくる強相関電子系のドレスド電子状態

Speaker: **Prof. Shinichiro IWAI**

Department of Physics, Tohoku University

岩井 伸一郎

(東北大学大学院理学研究科 教授)

In molecular organic conductors, we have reported various types of photoinduced phase transitions, i.e., a melting charge order (CO) [1-3], a dimer Mott (DM) insulator to metal transition [4], a growth of short-range ferroelectric CO domain [5]. On the other hand, recent advances of nearly single-cycle infrared light (with a width of several fs) enables us to apply >10 MV/cm intense field on solid surface. Such strong light field can realize a counter intuitive electronic responses which are referred as a dressed charge state with the driving field. Here, we discuss the following topics; i) a reverse process of the melting of CO i.e., the freezing of charge motion in layered organic conductor α -(ET)₂I₃[6, 7], ii) a red-shift of plasma-like reflectivity edge indicating a decrease of an effective transfer integral(*t*_{eff}) in quasi-one-dimensional (1D) conductor (TMTTF)₂AsF₆[8], and iii) strong field effects of Mott criticality and superconducting state in triangular dimer Mott system κ -(h-ET)₂Cu[N(CN)₂]Br.

[1] Iwai et al., Phys. Rev. Lett. 98, 097402 (2007).

[2] Kawakami et al., Phys. Rev. Lett. 105, 246402(2010).

[3] H. Itoh, Appl. Phys. Lett., 104, 173302(2014).

[4] Kawakami, Phys. Rev. Lett., 103, 066403(2009).

[5] K. Itoh, Phys. Rev. Lett. 110, 106401 (2013).

[6] Ishikawa, et al., Nature Commun. 5, 5528 (2014).

[7] Kawakami, et al., Phys. Rev. B95, 20115(R)(2017).

[8] Naitoh, et al., Phys. Rev. B93, 165126 (2016).