

物質工学域セミナー

2024年10月4日 16:00-
筑波大学 工学系学系3B-213号室

“From photoinduced small polarons to cooperative and macroscopic charge-transfer phase transition, monitored by ultrafast X-ray and infrared techniques”

The charge-transfer $\text{RbMn}[\text{Fe}(\text{CN})_6]$ materials exhibit wide thermal hysteresis around room temperature between $\text{Mn}^{\text{III}}\text{Fe}^{\text{II}}$ tetragonal and $\text{Mn}^{\text{II}}\text{Fe}^{\text{III}}$ cubic phases. A single laser shot can drive ultrafast photoinduced charge-transfer phase transition at room temperature, which is persisting. Ultrafast studies, based on X-ray and infrared techniques [1-4], provide fundamental mechanistic insight into far-from-equilibrium electronic and structural dynamics, from photoinduced charge-transfer polarons to tetragonal-to-cubic photoinduced phase transition.

[1] M. Hervé, et al., *Nat. Commun.* **2024**, *15*, 267.

[2] G. Privault, et al., *Angew. Chem. I.E.* **2024**.

[3] G. Azzolina, et al., *Angew. Chem. I.E.* **2021**, *60*, 232267.

[4] G. Azzolina, et al., *J. Mater. Chem. C* **2021**, *9*, 6773xxx



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