



Exploring perovskite compounds from oxides to organic-inorganic halides

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Abstract

Perovskites have long been studied in solid-state chemistry due to their accessibility, stability, and functionality. Here, I will present an exploration of perovskite-based compounds from oxides to organic-inorganic halides. Primarily, I am focusing on how defects are arranged within perovskite frameworks across a variety of compounds [1-2]. Oxygen-defect ordering gives rise to a variety of structures in perovskite oxides. Furthermore, I recently discovered that novel defect ordering occurs in organic-inorganic halides [3-4], opening a new frontier in solid-state chemistry.

References

- [1] T. Yamamoto et al., *Nat. Commun.* 11, 5923 (2020).
- [2] T. Yamamoto et al., *Adv. Sci.* 10, 230187 (2023).
- [3] T. Ohmi, T. Yamamoto et al., *J. Am Chem. Soc.* 145, 19759–19767 (2023).
- [4] T. Ohmi, T. Yamamoto et al., *J. Am Chem. Soc.* 148, 2858–2863 (2026).

Biography



Prof. Takafumi Yamamoto is a full professor at Kyoto University. He received his Ph.D in 2012 at Kyoto University in Prof. Hiroshi Kageyama's group. Then, He joined in Kageyama's group as an assistant professor from 2012 to 2019. After that, he joined Prof. Masaki Azuma's group at the Tokyo Institute of Technology as an associate professor from 2019 to 2024, prior to his current position at Kyoto University. His research interests are exploring new solid-state compounds using various reaction techniques, such as low-temperature topochemical reactions and high-pressure reactions. He was originally focused on oxide-based compounds, and he recently expanded his work to organic-inorganic hybrid compounds.

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