

Mardi 21 février 2023 à 14h – Amphi



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Synthesis of new functional mixed anion materials

The hydride anion H^- with its $1s^2$ electronic structure is one of the most fascinating anions with a light mass, large polarizability, a very flexible ionic radius, and multiple coordination numbers. Despite these exciting features, the realization of new materials combining the hydride and other anions is limited by tremendous synthesis challenges.

In this talk, we will present our new mixed anion-hydrides systems and the different techniques used for their synthesis (high pressure, topochemistry and others). From layered structures to perovskites and antiperovskites, the presence of H^- and other anions within the same frameworks has allowed us to yield novel room temperature hydride conducting materials and alkali ion conducting materials for solid state electrolytes.

[Hydride-based antiperovskites with soft anionic sublattices as fast alkali ionic conductors](#)

S Gao, T Broux, S Fujii, C Tassel, K Yamamoto, Y Xiao, I Oikawa, ...

Nature communications, 2021, 12 (1), 201

[Conduction band control of oxyhalides with a triple-fluorite layer for visible light photocatalysis](#)

A Nakada, D Kato, R Nelson, H Takahira, M Yabuuchi, M Higashi, ...

Journal of the American Chemical Society, 2021, 143 (6), 2491-2499

[Trihalide Mixing by Size-Flexible \$\text{H}^-\$ Ions in Layered \$\text{Ba}_2\text{H}_3\$ \(Cl, Br, I\)](#)

H Ubukata, F Takeiri, C Tassel, S Kobayashi, S Kawaguchi, T Saito, ...

Chemistry of Materials, 2022, 34 (12), 5654-5666

