Faculty of Science and Technology
Tokushima University

Development of Oxide-based Solid Acid Catalysts and X-ray Spectroscopy

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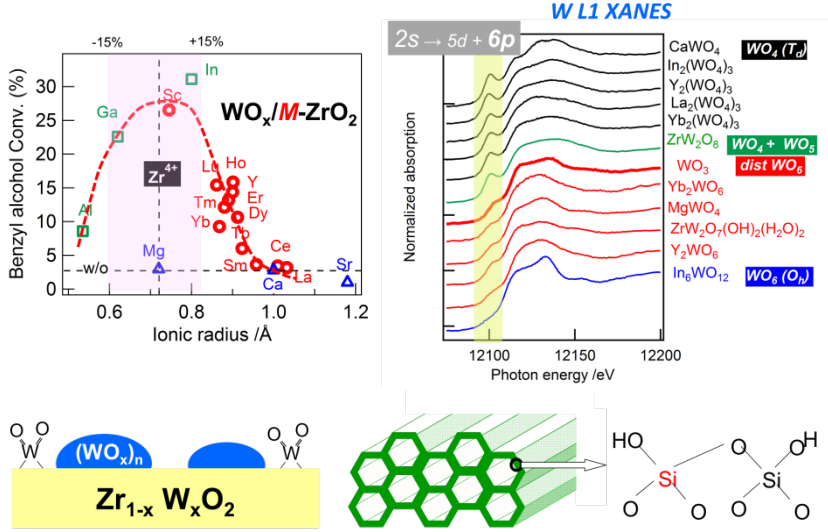
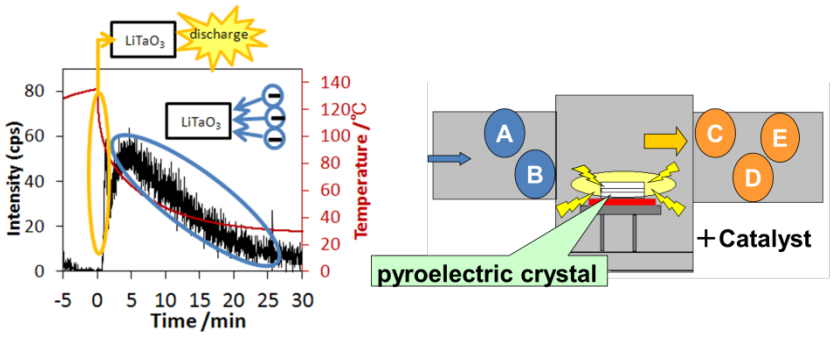
1. Development of Solid Acid Catalysis, Structural and Electronic Characterization



2. Analysis of X-ray Emission from Pyroelectric Crystal, and Application of Pyroelectricity for Chemical Reactions



Content:

Zirconium oxide-based solid acids have been attracted much attention because of their strong acidic property which promotes n-butane isomerization even at ambient temperatures, highly thermal stability, and ease of preparation and handling. We have been investigating generation mechanism of the strong acidity and the active sites using typical reactions and spectroscopic techniques. Catalyses of new solid acid-base catalysts, and their chemical and physical properties was also examined.

X-ray absorption spectroscopy has been widely utilized as a powerful tool to investigate the chemical states and electronic structure of target elements in many research fields. We have characterized various kinds of catalyst and environmental samples using SR- and/or laboratory-type XAFS. Features of the pre-edge peaks were investigated from a view point of the selection rule, coordination number, number of d-electron and symmetry of the coordination sphere.

X-ray emission behavior from a pyroelectric single crystal, pyroelectricity-induced chemical reactions have been also investigated.

Keywords : Solid Acid, XAFS, Pyroelectric Crystal

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