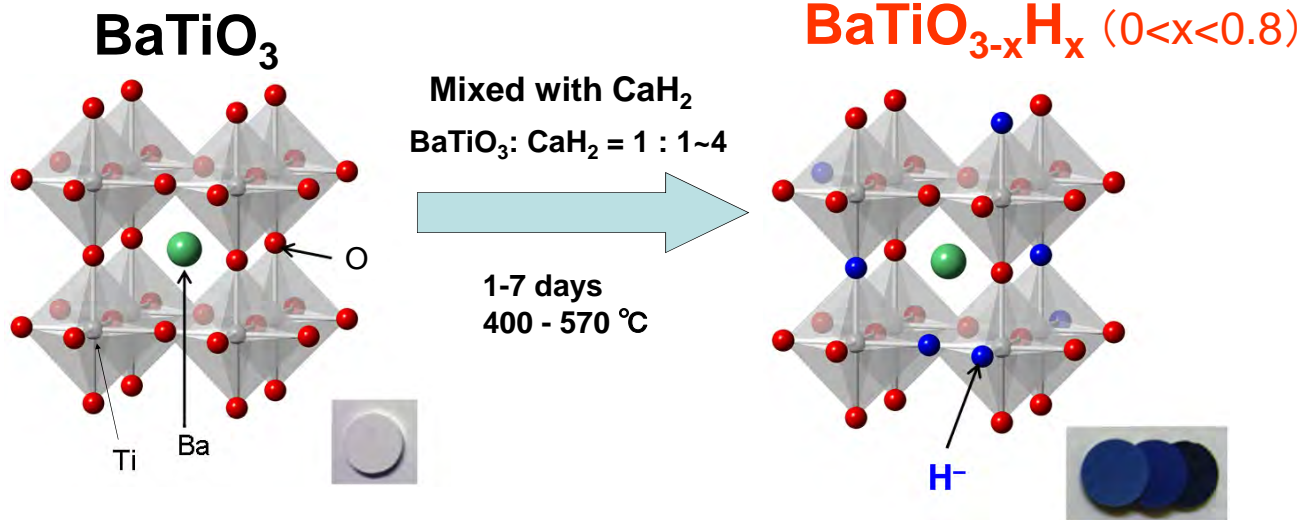


1. Preparation of $\text{BaTiO}_{3-x}\text{H}_x$

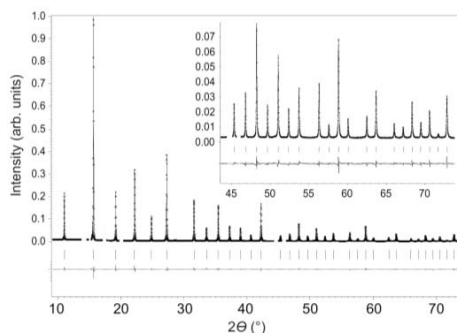
- The oxyhydrides $\text{BaTiO}_{3-x}\text{H}_x$ are prepared by a novel low temperature reaction of a well-known ferroelectric compound BaTiO_3 . The reducing reaction with CaH_2 results in color change of powder specimen from white to light blue, dark blue, black compound, depending on the severity of the reduction. Despite the presence of H^- ions, the oxyhydrides are stable in air, boiling water and aqueous alkali solutions.



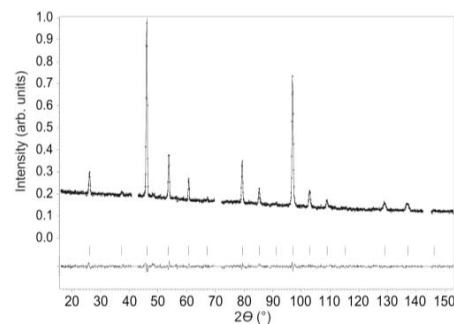
2. Characterization of $\text{BaTiO}_{3-x}\text{H}_x$

- Synchrotron X-ray/neutron diffractions combined refinement reveal that $\text{BaTiO}_{3-x}\text{H}_x$ adopts cubic perovskite with H^- ions located randomly at the oxygen site.

Synchrotron XRD

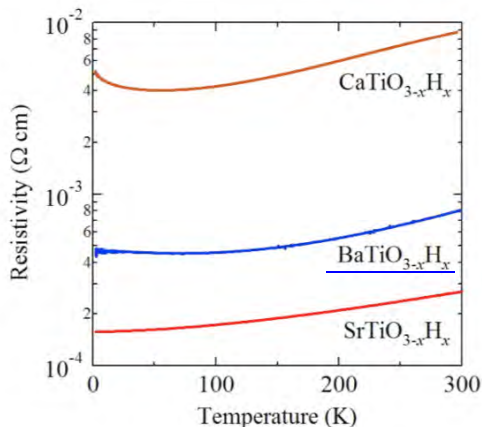


Neutron Diffraction



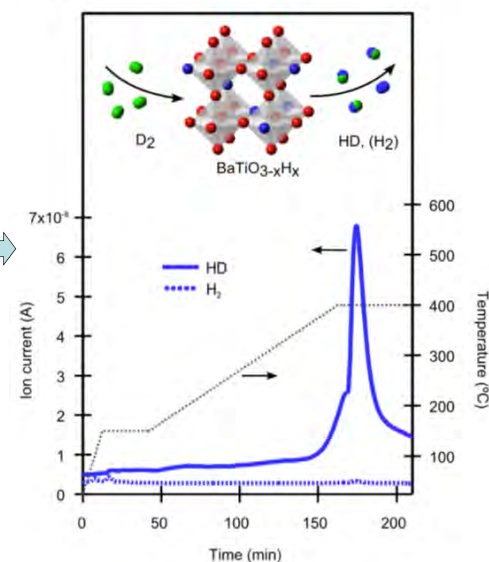
3. Metallic Conductivity & Deuteride Exchange of $\text{BaTiO}_{3-x}\text{H}_x$

- $\text{BaTiO}_{3-x}\text{H}_x$ is intrinsically metallic with 10^2 - 10^4 S/cm.



- $\text{BaTiO}_{3-x}\text{H}_x$ is exchangeable with D_2 to give $\text{BaTiO}_{3-x}\text{H}_y\text{D}_z$.

Mass spectrometry



Patent Licensing Available

Patent No. : WO2013/008705

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