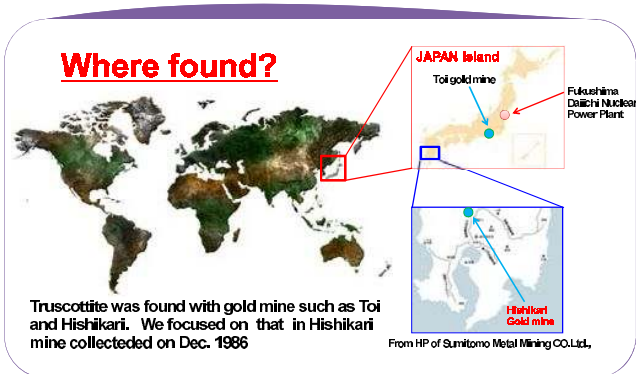
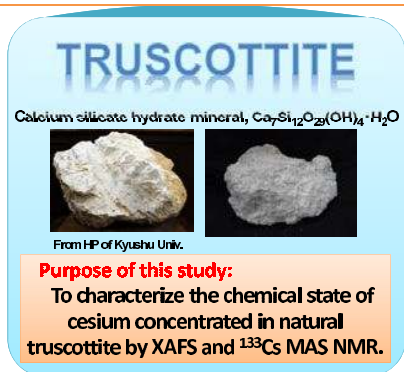
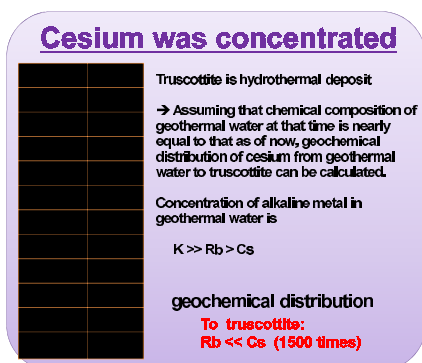
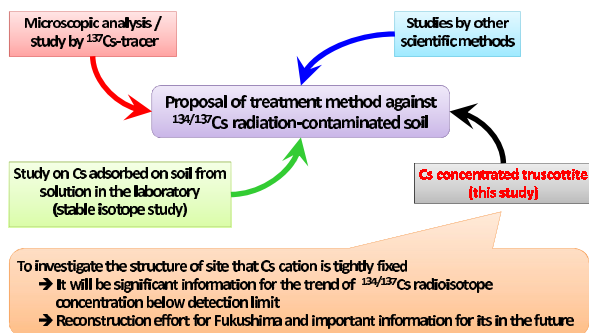


Chemical state of cesium concentrated in truscottite

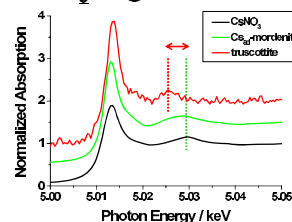
¹Faculty of Arts and Science, Kyushu Univ., Japan, ²Faculty of Engineering, Kyushu Univ., Japan, ³Japan Synchrotron Radiation Research Institute (JASRI/SPring-8), ⁴Faculty of Science, Kyushu Univ., Japan
Hironori OHASHI¹, Kotaro YONEZU², Tetsuo HONMA³, Daisuke KAWAMOTO⁴, Yoshihiro OKAUE⁴, Koichiro WATANABE² and Takushi YOKOYAMA⁴
 e-mail : h-ohashi@artsci.kyushu-u.ac.jp



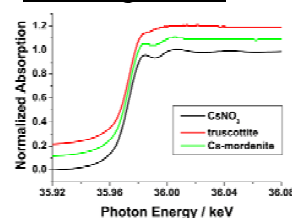
Concept



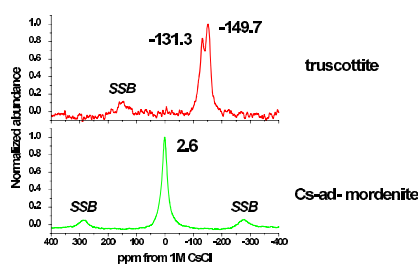
Cs L₃-edge XAFS



Cs K-edge XAFS

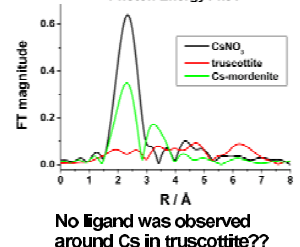
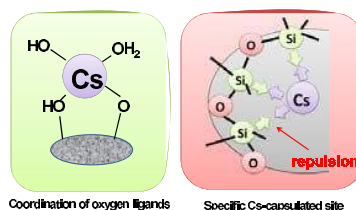


¹³³Cs MAS NMR (400 MHz)



High magnetic field chemical shift for Cs in truscottite → Dehydrated or ligand uncoupled ??

Image of the Cs in the truscottite based on the NMR and XAFS results



Conclusion

¹³³Cs NMR and Cs-K, L₃ XAFS were observed for cesium concentrated in truscottite. From NMR results, Cesium in truscottite is considered to be dehydrated or ligand uncoupled. From XANES results, the chemical state of cesium in truscottite is considered to be different from that of cesium adsorbed on mordenite. Cesium ion is considered to be incorporated to specific site. In this site, oxygen atoms may not be located around the cesium cations.

Experimental

Solid samples preparation

- Truscottite : collected at Hishikari mine, Japan.
- Cs adsorbed mordenite: mordenite (1g) was added to 0.1 M CsCl solution, then filtrate and dried. Cs loaded: 17.4 % (AAS)

Characterization Methods

- ¹³³Cs MAS NMR: JEOL JNM-ECR 400 (9.39T)
- Cs-K XAFS (19-SSD), BL14B2 @SPring-8, JAPAN
- Cs-L₃ XAFS (SDD), BL06(Beamline for Kyushu-univ.)@SAGA-LS, JAPAN