

## Chemical state of cesium concentrated in truscottite

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Since the accident at Fukushima nuclear power plant, Japan, the problem of radiocesium has been become serious. To solve the problem rapidly is required socially. As a series of studies on elucidation of the specific sorption site of cesium (Cs) in soil and development of the removal method of Cs from the polluted water, in this paper, we investigated the chemical state of Cs concentrated in truscottite ( $\text{Ca}_{14}(\text{Si}_{24}\text{O}_{58})(\text{OH})_8 \cdot 2\text{H}_2\text{O}$ ) by  $^{133}\text{Cs}$  MAS NMR and XAFS.

We found by chance a truscottite, in which Cs is highly concentrated, in the Hishikari epithermal gold deposit, Japan. This truscottite was precipitated from geothermal water due to geothermal activity before about 0.5 million years. The chemical composition of the truscottite is shown in Table 1. The Cs content is high to be 0.20 %. In the  $^{133}\text{Cs}$  MAS NMR spectrum, only a peak appeared at the similar chemical shift position as Cs adsorbed onto mordenite. The Cs  $L_3$ -edge and K-edge XANES spectra for Cs in the truscottite were different from that of Cs adsorbed onto mordenite.

SiO <sub>2</sub>	CaO	MgO	Al <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O	
59.37	32.46	0.01	1.12	1.04	
K <sub>2</sub> O	Rb <sub>2</sub> O	Cs <sub>2</sub> O	MnO	H <sub>2</sub> O	Total
0.69	0.0081	0.2	0.18	5.84	100.09

Table 1 Chemical composition of truscottite (weight %)