

Preparation of Composite Materials of Na-P1 Type Zeolite and Magnetite for Cs Decontamination in Soil

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Summary

The reaction time and the concentration of NaOH solution were studied for the preparation of Na-P1 type zeolite using fly-ash. Addition of NaAlO₂ is effective for the improvement of cation exchange capacity (CEC) value. A new composite material consisting of the Na-P1 type zeolite and magnetite was synthesized from the waste fly-ash of thermal power stations and iron chlorides for the decontamination of radioactive ¹³⁴Cs and ¹³⁷Cs. The magnetic collection was possible using this composite material after Cs⁺ ion adsorption. The existence of nanosized magnetites in the polycrystalline zeolite (several micrometers) was confirmed by TEM observations. Decontamination test of the radioactive Cs⁺ ion using the magnetic Na-P1 type zeolite and the soil was succeeded.

Key Words: Fly-ash, Na-P1 Type Zeolite, Magnetite, Magnetic Zeolite, Radioactive Cs Decontamination