



Contribution ID: 1062

Type: Poster

Sorption of radionuclides from aqueous solutions onto zeolites

Monday, 16 May 2022 18:12 (3 minutes)

Radioactive waste contains large amount of radionuclides. A radioactive isotopes of caesium (^{137}Cs , half-life time 30 years) and strontium (^{90}Sr , half-life time 28 years) belong to the main fission products existing in the radioactive wastes produced in nuclear power. The ion exchange technology is one of the most commonly used methods for safe treatment of radionuclide waste. Zeolites are often used as sorbents of radionuclides.

In this study, zeolites A, X and JBW, were synthesized by a hydrothermal method from metakaoline. Sorbents were tested for sorption of ^{134}Cs and ^{85}Sr from various aqueous solutions. The prepared zeolites were characterized by X-ray powder diffraction, Raman and FTIR spectroscopy. Morphology was observed by scanning electron microscopy. The results showed that ^{134}Cs and ^{85}Sr radionuclides were efficiently adsorbed onto zeolites.

Acknowledgements: This work was partially supported by the Technology Agency of the Czech Republic, project TH04030285.

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Session Classification: Nuclear Fuel Cycle

Track Classification: Chemistry of Nuclear Fuel Cycle, Radiochemical Problems in Nuclear Waste Management