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Synthesize of Potassium Nickel Hexacyanoferrate Complex on Natural Clinoptilolite Support to Enhance It Sorption Efficiency

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Abstract: In this research, the synthesize possibility of Potassium Nickel Hexacyanoferrate complex on natural clinoptilolite, as a support for removal of Cs^{+} and Sr^{+2} from radioactive waste, was investigated. Previous work showed that in the high concentration of sodium ion the sorption of these radionuclides on zeolites is low, therefore we enhance the efficiency for the purpose with loading Potassium Nickel Hexacyanoferrate complex on clinoptilolite. First Potassium Nickel Hexacyanoferrate complex was synthesized and characterized using ICP-AES, XRD and SEM methods. Then the structure of clinoptilolite and the complex loaded zeolite were characterized using IR, EDS, SEM and XRD methods. Sorption of cesium clinoptilolite and potassium nickel hexacyanoferrate-loaded clinoptilolite (CFC) was determined in the presence of various concentration of sodium ion. Results showed the sorption of CFC was improved in comparison to its original natural clinoptilolite.

Keyword: *Potassium nickel hexacyanoferrate complex, Clinoptilolite, Cs^{+} Removal.*