

Intercalated Poly(triazine imide) as a selective and specific adsorbent for radioactive Cs

황승규, 전영시¹, 허윤석[†]
인하대학교; ¹전남대학교
(yunsuk.huh@inha.ac.kr[†])

Radioactive material remediation received much attraction in recent due to the outbreak of the accident in one of the nuclear power plant in Japan. Among the radioactive contaminants, radioactive Cs is one which receives prime importance due to its high rate of distribution in the bio-environment. Hence it becomes important to remove the radioactive Cs from the contaminant sites. In this context, we fabricate poly(triazine imide) (PTI) as a selective adsorbent for radioactive Cs, PTI was synthesized from dicyandiamide in controlled atmosphere at 550 °C using a layer by layer assembly through the intercalation of metal chlorides (LiCl, KCl, LiKCl). The prepared PTI intercalated with different metal chlorides were characterized by X-ray diffraction, Fourier infrared spectroscopy, scanning electron microscopy, and X-ray photoelectron spectroscopy. The effect of adsorbent dosage and contact time towards Cs removal were studied; adsorption kinetics, and isotherm studies were also reported for the developed adsorbent (PTI). Furthermore, we have also investigated the effect of co-existing cations in order to establish the applicability of PTI in real time environments. The observed results are promising for PTI, to use as a potential adsorbent for radioactive contaminants.