



Contribution ID: 12

Type: Oral presentation

## SYNTHESIS OF IRON HEXACYANOFERRATE IMOBILISED ON CELLULOSE ACETATE FOR CAESIUM SORPTION FROM AQUATIC ENVIRONMENTS

The present study aims development of iron hexacyanoferrate (PB) cellulose acetate (CA) sorbent for the removal of radioactive caesium, rubidium, and thallium from contaminated water environments. The synthesis of PB-CA sorbent conducted by ultrasound assisted micro nozzle technique provided in situ immobilisation of sorbent particles on chemically cleaned of non-used cigarette butt fiber materials. The experiments were provided in freshwater aquariums at laboratory, by using Cs-133 chloride as the model substance added to the aquarium water

The experiments of Cs accumulation studies were provided in the ecosystem containing *Ceratophyllum submersum* and *Pomacea bridgesii* and PB-CA sorbent added to the water filtration system. Obtained results showed that despite the presence of PB as a sorbent, still notable accumulation of Cs occurred also in plants *Ceratophyllum submersum* and living organisms *Pomacea bridgesii*. In the process of this study 95% of introduced Cs was accumulated on PB while 3% was accumulated in *Ceratophyllum submersum* and 1% in the flesh of *Pomacea bridgesii*.

During these studies sorption capacity of used PB sorbent was evaluated and was equal to 17.8 mgCs/gPB. The sorbent capacity is comparable to that reported in the studies [1] indicating effectiveness of the developed sorbent for Cs removal from the contaminated water.

Obtained experimental data allowed to characterise kinetic model of Cs sorption on PB. The experimental data corresponded to the Lagergren's pseudo-second order kinetic model and can be characterized with sorption capacity at equilibrium which corresponds to 25 mg/g.

**Primary authors:** Mr GRINBERGS, Andrejs; Prof. VIKSNA, Arturs; Mr REINHOLDS, Ingars; EISMONTS, Ugis; Ms SALENIECE, Kristine; Mr BERTINS, Maris; Mrs MUTER, Olga

**Presenter:** EISMONTS, Ugis