



Contribution ID: 1073

Type: Poster

## Sorption of europium on cementitious materials in the presence of organic substances

*Monday, 16 May 2022 18:15 (3 minutes)*

Cement-based materials are used as engineering barriers for low-level and intermediate-level radwaste and in high-level radwaste disposal as facilities or buffer materials. To evaluate the long-term safety of radioactive waste repositories, it is necessary to describe the behavior of stored radionuclides that will be present, such as europium used as an analog of trivalent actinoids. The migration of radionuclides is affected by interaction with the material of the engineering barriers of the repositories, including cement-based barriers. In this study, the sorption of europium on hardened cement paste (HCP) of type CEM I, CEM III and synthetic cement phase CSH (Calcium-Silicate-Hydrate) with Ca/Si ratio 1.0 was carried out with the addition of different organic substances (adipic acid, phthalic acid, EDTA). Radionuclide sorption is described by the distribution ratio ( $R_d$ ) between the liquid and solid phases (L/S) or with sorption isotherm.

The research leading to these results has received funding from the European Union's Horizon 2020 Innovation Programme under grant agreement n° 847593 (EURAD –CORI). The output was created with financial participation of SÚRAO (Czech Radioactive Waste Repository Authority) (SO2020-017). This contribution is also partially a result of the grant of the CTU Student Grant Scheme No. SGS22/187/OHK4/3T/14.

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**Session Classification:** Nuclear Fuel Cycle

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