

Title (en)

Method of disposal of radioactive waste in "synthetic rock"

Title (de)

Methode der Entsorgung radioaktiver Abfälle in "synthetischem Gestein"

Title (fr)

Méthode de traitement des déchets radioactifs dans une « roche synthétique »

Publication

EP 2693443 A2 20140205 (EN)

Application

EP 13176463 A 20130715

Priority

PL 40023512 A 20120803

Abstract (en)

The invention relates to the disposal of radioactive waste by a modified sol-gel method by enclosing it in durable ceramic crystallographic structures of ceramic synroc materials of type perovskite. The method according to the invention lies in the fact that to the previously prepared chlorine-free solution of colloidal sol, preferably $\text{Ti}(\text{NO}_3)_4$, the complexing compound is added, preferably ascorbic acid ASC, relative to the sum of the moles of metal from 0.1 to 0.3 and introduces calcium carbonate and elements included in the high-level radioactive waste, in the form of carbonates or nitrates, especially strontium, cobalt, cesium and neodymium, in a molar ratio of from 2% to 14% of the individual metals (Me), thereby replacing from 2% to 14% by mol of introduced Ca^{2+} . The thus obtained sol is evaporated, dried and subjected to heat treatment and is eventually subjected to XRD and IR analysis, then the precursor of the synroc is pelletized and calcined at a temperature of 1200°C for 2h.

IPC 8 full level

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CPC (source: EP)

G21F 9/162 (2013.01); **G21F 9/301** (2013.01); **G21F 9/34** (2013.01)

Citation (applicant)

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BA ME

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