

Title (en)

Method for separating technetium, ruthenium and palladium from solutions of nuclear fuels.

Title (de)

Verfahren zur Abtrennung von Technetium, Ruthenium und Palladium aus Kernbrennstoff-Lösungen.

Title (fr)

Procédé pour la séparation de technétium, de ruthénium et de palladium par des solutions de combustible nucléaire.

Publication

**EP 0347625 B1 19931020 (DE)**

Application

**EP 89109897 A 19890601**

Priority

DE 3821295 A 19880624

Abstract (en)

[origin: EP0347625A2] In the sepn. of Tc, Ru and Pd values from streams of substances obtd. by reprocessing irradiated nuclear fuel, by pptn. and ion exchange from a stock soln. (I) of the values and other fission/activation prods. in HNO<sub>3</sub>, the novel features are that: a) Pd is pptd. selectively by adding diethylthiourea (II) to (I) and the ppte. is sepd.; b) Tc and Ru are sepd. by passing Pd-free (I) into a bed of strongly acidic cation exchanger (III); c) (III) is washed with dil., pref. ca. 2 m HNO<sub>3</sub>; d) Tc is recovered by selective oxidative elution with dil. HNO<sub>3</sub> soln. (IV) contg. an oxidant; and e) Ru is recovered by selective elution with conc., pref. 6-8 M HNO<sub>3</sub>. Pref. (I) is treated with ca. 4 mole (II)/mole Pd and also ca. 6 mole (II)/mole Ru present. (III) is a macroporous styrene-DVB copolymer with 2-8% crosslinking, pref. 'AG50W-X2' (RTM) (IIIA) with 2% crosslinking. (IV) contains H<sub>2</sub>O<sub>2</sub>, the concns. pref. being 0.05-3, esp. 0.1-1 mole/l HNO<sub>3</sub> and 0.05-3, esp. 0.1-1 mole/l H<sub>2</sub>O<sub>2</sub>. (I) is produced from feed clarified slurry by bringing most of the slurry into soln. by decomposition with carbonate and addn. of NHO<sub>3</sub> and sepn. of the insol. Rh oxide from the soln. The ppte. formed from (II) and Pd is converted to Pd oxide at ca. 500 deg.C and Pd metal is produced by calcining the oxide at ca. 900 deg.C. Pd-free (I) is warmed to ca. 70 deg.C ofr ac. 30 min. to accelerate Ru complex formation with (II).

IPC 1-7

**G21F 9/06**; C01G 55/00

IPC 8 full level

**G21F 9/06** (2006.01)

CPC (source: EP)

**G21F 9/06** (2013.01)

Cited by

EP0893450A1; CN113406114A; WO2023170354A1; FR3133390A1

Designated contracting state (EPC)

BE FR GB

DOCDB simple family (publication)

**EP 0347625 A2 19891227**; **EP 0347625 A3 19900228**; **EP 0347625 B1 19931020**; DE 3821295 A1 19891228; DE 3821295 C2 19910124

DOCDB simple family (application)

**EP 89109897 A 19890601**; DE 3821295 A 19880624