Title (en)

METHOD FOR SEPARATING TECHNETIUM, RUTHENIUM AND PALLADIUM FROM SOLUTIONS OF NUCLEAR FUELS

Publication

EP 0347625 A3 19900228 (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 HNO3, 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 HNO3; d) Tc is recovered by selective oxidative elution with dil. HNO3 soln. (IV) contg. an oxidant; and e) Ru is recovered by selective elution with conc., pref. 6-8 M HNO3. 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 H2O2, the concns. pref. being 0.05-3, esp. 0.1-1 mole/1 HNO3 and 0.05-3, esp. 0.1-1 mole/1 H2O2. (I) is produced from feed clarified slurry by bringing most of the slurry into soln. by decomposition with carbonate and addn. of NHO3 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).

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