Title (en)

ROOM TEMPERATURE ELECTRODEPOSITION OF ACTINIDES FROM IONIC SOLUTIONS

Title (de)

GALVANISIERUNG VON AKTINIDEN AUS IONISCHER LÖSUNGEN BEI RAUMTEMPERATUR

Title (fr)

ÉLECTRODÉPOSITION À TEMPÉRATURE AMBIANTE DES ACTINIDES À PARTIR DE SOLUTIONS IONIQUES

Publication

EP 2954098 A4 20160907 (EN)

Application

EP 14749320 A 20140211

Priority

- US 201313764282 A 20130211
- US 2014015749 W 20140211

Abstract (en)

[origin: WO2014124428A1] Uranic and transuranic metals and metal oxides are first dissolved in ozone compositions. The resulting solution in ozone can be further dissolved in ionic liquids to form a second solution. The metals in the second solution are then electrochemically deposited from the second solutions as room temperature ionic liquid (RTIL), tri-methyl-n-butyl ammonium n-bis(trifluoromethansulfonylimide) [Me3NnBu] [TFSI] providing an alternative non-aqueous system for the extraction and reclamation of actinides from reprocessed fuel materials. Deposition of U metal is achieved using TFSI complexes of U(III) and U(IV) containing the anion common to the RTIL. TFSI complexes of uranium were produced to ensure solubility of the species in the ionic liquid. The methods provide a first measure of the thermodynamic properties of U metal deposition using Uranium complexes with different oxidation states from RTIL solution at room temperature.

IPC 8 full level

C25D 3/54 (2006.01); **C25C 1/22** (2006.01); **C25C 3/34** (2006.01); **C25C 5/04** (2006.01); **C25D 3/66** (2006.01)

CPC (source: EP)

C25C 3/34 (2013.01); **C25C 5/04** (2013.01); **C25D 3/54** (2013.01); **C25D 3/665** (2013.01)

Citation (search report)

- [A] WO 0113379 A1 20010222 - BRITISH NUCLEAR FUELS PLC [GB], et al
- [A] US 2007129568 A1 20070607 - FLANAGAN SCOTT [US], et al
- [A] WO 2007147222 A2 20071227 - UNIV LEUVEN KATH [BE], et al
- [X] DENIS BELLER ET AL: "Actinide Foil Production for MPACT Research F I C I R&D Fuel Cycle R&D", 30 October 2012 (2012-10-30), XP055278522, Retrieved from the Internet <URL:https://neup.inl.gov/SiteAssets/Final%20%20Reports/FY%202011/11-3138%20NEUP%20Final%20Report.pdf> [retrieved on 20121030]
- See references of WO 2014124428A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2014124428 A1 20140814; AU 2014214595 A1 20150910; CA 2900932 A1 20140814; CN 105102688 A 20151125; EP 2954098 A1 20151216; EP 2954098 A4 20160907; JP 2016507008 A 20160307

DOCDB simple family (application)

US 2014015749 W 20140211; AU 2014214595 A 20140211; CA 2900932 A 20140211; CN 201480020469 A 20140211; EP 14749320 A 20140211; JP 2015557194 A 20140211