

THERAMIN 2020 Conference: Thermal Treatment of Radioactive Waste

IOP Conference Series: Materials Science and Engineering
Volume 818

Manchester, United Kingdom
4 - 5 February 2020

ISBN: 978-1-7138-2676-7
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

THERMAL TREATMENT FOR RADIOACTIVE WASTE MINIMISATION AND HAZARD REDUCTION: OVERVIEW AND SUMMARY OF THE EC THERAMIN PROJECT	1
<i>S J Scourfield, J E Kent, S M Wickham, M Nieminen, S Clarke, B Frasca</i>	
STRATEGIC STUDY OF THERMAL TREATMENT OF EUROPEAN RADIOACTIVE WASTES.....	9
<i>S Doudou, E K Swain-Phipps, A J Fuller, S M Wickham, N Daniels, E Fourcy, M Fournier, B Frasca, K Meert, A Mikusova, M Olin, R Poskas, C Seales</i>	
ASSESSING THE VALUE OF THERMAL TREATMENT TECHNOLOGIES	18
<i>A J Fuller, S Doudou, J E Kent, E J Harvey, S M Wickham</i>	
ACTIVE DEMONSTRATION OF THE THERMAL TREATMENT OF SURROGATE SLUDGE AND SURROGATE DRUMS USING THE GEOMELT™ IN CONTAINER VITRIFICATION (ICV) MELTER INSTALLED IN>NNL CENTRAL LABORATORY	25
<i>S Clarke, C Scales, N Patel, J Roe, A W Banford</i>	
IN-CAN VITRIFICATION OF ASH.....	33
<i>M Fournier, N Massoni, J F Hollebecque</i>	
PLASMA TECHNOLOGY TO RECONDITION RADIOACTIVE WASTE: TESTS WITH SIMULATED BITUMEN AND CONCRETE IN A PLASMA TEST FACILITY.....	41
<i>J Deckers</i>	
GASIFICATION-BASED THERMAL TREATMENT OF LOW AND INTERMEDIATE LEVEL WASTE CONTAINING ORGANIC MATTER.....	48
<i>M Nieminen, J Laatikainen-Luntama, M Olin</i>	
PYROLYSIS OF RADIOACTIVE SPENT RESINS IN THE PRIME INSTALLATION	53
<i>J Hansen, J Deckers</i>	
HOT ISOSTATIC PRESSING: THERMAL TREATMENT TRIALS OF INACTIVE AND RADIOACTIVE SIMULANT UK INTERMEDIATE LEVEL WASTE.....	62
<i>L J Gardner, S A Walling, N C Hyatt</i>	
HOT ISOSTATICALLY PRESSED ZIRCONOLITE WASTEFORMS FOR ACTINIDE IMMOBILISATION	69
<i>L R Blackburn, L J Gardner, S K Sun, E R Maddrell, M C Stennett, C L Corkhill, N C Hyatt</i>	
ADVANCED GAS-COOLED REACTOR SIMFUEL FABRICATED BY HOT ISOSTATIC PRESSING: A FEASIBILITY INVESTIGATION	76
<i>H Ding, L J Gardner, R Mohun, C L Corkhill, M C Stennett, N C Hyatt</i>	
DEVELOPMENT OF PHOSPHATE GLASS AND MULTI-PHASE TITANATE CERAMIC COMPOSITIONS FOR THERMAL TREATMENT OF IRRADIATED NUCLEAR FUEL RESIDUES.....	84
<i>L Harnett, M C Stennett, E R Maddrell, N C Hyatt</i>	
DEVELOPMENT OF GENERIC CRITERIA FOR EVALUATING THE DISPOSABILITY OF THERMALLY TREATED WASTES	91
<i>L Harvey, D Galson, S Catherin, M-A Romero, M Fournier, A Fuller, S Wickham</i>	

CHARACTERISATION OF CO-MIXED HIP WASTEFORMS FOR MAGNOX SLUDGE AND CLINOPTILOLITE WASTES.....	99
<i>S A Walling, L J Gardner, N C Hyatt</i>	
INCINERATION-VITRIFICATION OF A MIXTURE OF ZEOLITES, DIATOMS AND ION EXCHANGE RESINS USING THE SHIVA PROCESS	107
<i>M Fournier, F Rousset</i>	
DISSOLUTION OF PLASMA TREATED NON-RADIOACTIVE SURROGATE CEMENTED CONCENTRATES AND ION EXCHANGE RESINS IN KOH SOLUTION AT 40 °C	113
<i>K Ferrand, S Caes, K Lemmens, K Meert</i>	
GEOPOLYMERISATION OF GASIFIED ION-EXCHANGE RESINS, MECHANICAL PROPERTIES AND SHORT-TERM LEACHING STUDIES	121
<i>Tapio Vehmas, Emmi Myllykylä, Matti Nieminen, Jaana Laatikainen-Luntama, Markku Leivo, Markus Olin</i>	
SYNTHESIS AND CHARACTERISATION OF HIGH CERAMIC FRACTION BRANNERITE (UT ₂ O ₆) GLASS-CERAMIC COMPOSITES	129
<i>M C Dixon Wilkins, E R Maddrell, M C Stennett, N C Hyatt</i>	
CE AND U SPECIATION IN WASTEFORMS FOR THERMAL TREATMENT OF PLUTONIUM BEARING WASTES, PROBED BY L ₃ EDGE XANES.....	135
<i>D J Bailey, M C Stennett, S K Sun, L J Gardner, S A Walling, C L Corkhill, B Ravel, N C Hyatt</i>	
LABORATORY BASED X-RAY ABSORPTION SPECTROSCOPY OF IRON PHOSPHATE GLASSES FOR RADIOACTIVE WASTE IMMOBILISATION: A PRELIMINARY INVESTIGATION.	142
<i>L M Mottram, M C Stennett, S K Sun, N C Hyatt</i>	
INFLUENCE OF THERMAL TREATMENT ON THE DISPOSABILITY OF SPENT ION EXCHANGE RESINS IN A DEEP GEOLOGICAL REPOSITORY: A FRENCH CASE.....	151
<i>B Frasca, L Griffault, J Lefevre, C Martin, M A Romero</i>	
THE HADES FACILITY FOR HIGH ACTIVITY DECOMMISSIONING ENGINEERING & SCIENCE: PART OF THE UK NATIONAL NUCLEAR USER FACILITY	158
<i>N C Hyatt, C L Corkhill, M C Stennett, R J Hand, L J Gardner, C L Thorpe</i>	

Author Index