

International Conference on High-Temperature Reactor Technology (HTR 2021)

Journal of Physics: Conference Series Volume 2048

Online
2-5 June 2021

ISBN: 978-1-7138-5019-9
ISSN: 1742-6588

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. (2023)

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

Preface	
Guidance for Committees	
Peer Review Declaration	
The Challenges of Implementing the Indonesian Experimental Power Reactor (RDE) Program	1
<i>D S Wisnubroto, G R Sunaryo, Y S B Susilo, S Bahri, T Setiadipura</i>	
RDE Design Strategy for Indonesia Experimental NPP	7
<i>G R Sunaryo, S Bakhri, M Subekti, T Setiadipura, D S Wisnubroto</i>	
Uranium Exploration, Deposit and Resources: The Key of Nuclear Power Plant Development Program in Indonesia.....	14
<i>H Syaeful, I G Sukadana, Y S B Susilo, F D Indrastomo, A G Muhammad, Ngadenin</i>	
Technoeconomic Analysis of High Temperature Reactors for Industrial Applications in Poland	23
<i>B Chmielarz, A Bredimas, C Herpson</i>	
Cost Analysis of Nuclear Hydrogen Production Using IAEA-HEEP 4 Software	38
<i>E Dewita, R Prassanti, K S Widana, Y S B Susilo</i>	
Microstructural and Micro-Chemical Evolutions in Irradiated UCO Fuel Kernels of AGR-1 and AGR-2 TRISO Fuel Particles	46
<i>Zhenyu Fu, Yong Yang, Isabella J. Van Rooyen, Subhashish Meher, Boopathy Kombaiah</i>	
Raman Spectroscopy Studies of TRISO-Particle Fuel	63
<i>Zuzanna M Krajewska, W Gudowski</i>	
The Release of C-14 of HTR Graphite Spheres During High Temperature Oxidation	76
<i>X Chen, B Liu, T Wang, G Xu, L Zhang, C Mao, H Xiao, Y Shao, H Zhao, L He, Z Yin</i>	
Consecutive Heat Treatment of Pre-Lathed Pebble Fuel Elements for HTGR.....	82
<i>X Zhou, L Wang, Y Kang, S Zhang, J Li, X Shi, B Liu, J Zhang, Y Tang</i>	
Release Rates of Short-Lived Fission Gases from Modern Spherical Fuel Elements with TRISO-Coated Particles	88
<i>K Verfondern, B Liu, H Nabielek, T Wang, H J Allelein, C H Tang</i>	
R&D on Surrogate Kernel Fabrication in Support of Reaktor Daya Eksperimental (RDE) Project	100
<i>Sarjono, S Riyanto, E Mutiara, E Yusnitha, T Yulianto, R Langenati, A Sumaryanto</i>	
TRISO Fuel Performance Modelling with BISON.....	109
<i>B Collin, W Jiang, K Gamble, R Gardner, J Hales, B Haugh, S Novascone, J Roche, B Spencer, A Toptan</i>	
Hyphenated SEM-Raman Characterization for Matrix Graphite of HTGR Spherical Fuels.....	124
<i>Z Jiao, X Chen, C Zhang, G Xu, B Liu, Z Yin</i>	
Ti ₃ SiC ₂ -TiC-Si Antioxidant Coating Prepared on SiC Coated MG Spheres of HTR Fuel Element by Molten Salt Technique.....	134
<i>H Yang, H Zhao, X Liu, K Zhang, T Wang, Z Li, Y Gao, Bing Liu</i>	

Capability of Indonesian Hot Cell Towards Pebble Bed Post Irradiation Examination	144
<i>J Setiawan, S Ismarwanti, A Paid, H F Rahmatullah, R Sigit, M K Ajiriyanto</i>	
Intensive Study of Ceria Microsphere Stabilized with Zirconia by the External Gelatin Method	153
<i>Ridwan, A Insani, Mujamilah, A Patriati, G T Sulungbudi, M Rifai, Sarjono</i>	
The Effect of Catalysts Addition to Silicone Rubber as Pressure Transmitting Medium in the Pebble Fuel Production Process	162
<i>D Sutarya, I R Pamungkas, H Sukma, DS A Sartono</i>	
Corrosion Phenomena of High Temperature Alloys by Helium Impurities in the Primary Coolant of HTGR.....	171
<i>Q Wang, W Zheng, H Yin, S Li, X He, T Ma</i>	
Drop Analysis of Active Magnetic Bearing with Rolling-Sliding Integrated Auxiliary Bearing	179
<i>Mingqi Wang, Xingnan Liu, Yulan Zhao, Guojun Yang, Jianqiang Chen, Zhengang Shi</i>	
ASME Code Rules and ASTM Standards Integration for Ceramic Composite Core Materials and Components I	190
<i>J W Geringer, Y Katoh, S Gonczy, T Burchell, M Mitchell, M Jenkins, W Windes</i>	
Current Status of Purification of Indonesian Natural Graphite as a Candidate for Nuclear Fuel Matrix by Hydrometallurgy and Pyrometallurgy Methods.....	195
<i>D Mustika, Torowati, Sudirman, A Dimiyati, A Fisli, I M Joni, R Langenati</i>	
Study on the Implementation of Quality Assurance Aspect on High-Temperature Gas Cooled Reactor (HTGR)	204
<i>Sunarto, Sigit Santosa, Khusnul Khotimah, Sriyana</i>	
Accurate Nodal Diffusion Modelling on the High Temperature Test Reactor (HTTR).....	213
<i>M. Rizki, Oktavian, Volkan Seker, Brendan Kochunas, Yunlin Xu</i>	
Evaluation of PBMR-400 Core Design Steady State Condition with Serpent and AGREE.....	222
<i>H Ardiansyah, V Seker, T Downar, S Skutnik, W Wieselquist</i>	
Study on the Curved Channel Model in the Initial Core Loading of Pebble Bed High Temperature Reactors	234
<i>B Xia, J Zhang, J Guo, C Wei, Fu Li</i>	
Performance Improvement for Multi-Recycling HTGR Incorporated with MA Burning	240
<i>Y Fukaya, M Goto, X L Yan</i>	
Optimization of PeLUIt-150 Conceptual Design	253
<i>T Setiadipura, W Luthfi, S Bakhri, Suwoto, Zuhair, Z Li, Y Sun</i>	
Multi-Group Cross Section Library Generation for HTGR Lattice Physics Code XPZ.....	260
<i>Lerui Zhang, Ding She, Lei Shi, Richard Chambon, Alain Hébert</i>	
Impact of Different Nuclear Data Library on Control Rod Reactivity Worth Calculation of Small Pebble Bed Reactor	269
<i>Suwoto, H Adrial, T Setiadipura, Zuhair, S Bakhri</i>	
Neutronics for the GEMINI+ HTGR.....	281
<i>J C Kuijper, D Muszynski</i>	
HTR-10 OTTO Cycle Depletion Simulation Using Discrete Element Method Coupled Monte Carlo.....	300
<i>F Putra</i>	

Influence of Coiling Direction of Helical Tube Bundles on the Thermal-Hydraulics of the HTGR Steam Generator	312
<i>Weikai Gao, Xiaoyang Xie, Xiaowei Li, Xinxin Wu</i>	
Developing a Design Optimization Methodology for the Thermal-Hydraulic Evaluation for a High Temperature Reactor During a DLOCA	323
<i>Seddon Atkinson, Ander Gray, Edoardo Patelli</i>	
Simulation System for PeLUIt 150 MW Nuclear Reactor by Using vPower	338
<i>M Yunus, A A Budiman, S Zhe, Kiswanta, W Chunlin, M Subekti, S Bakhri, S Jun</i>	
Preliminary Study on HTR-10 Operating in Higher Outlet Temperature	345
<i>Yanhua Zheng, Bing Xia, Zhipeng Chen, Han Zhang, Jun Sun</i>	
Simulation of Steam Generator Tube Rupture on the Experimental Power Reactor (RDE)	353
<i>A. S. Ekariansyah, M. Subekti</i>	
Experimental Study on the Residual Heat Removal System in HTR-10	360
<i>Jing Li, Liqiang Wei, Yanhua Zheng, Tao Ma, Xiaoming Chen, Feng Xie, Haitao Wang</i>	
Modelling of FPGA-Based Reactor Protection Systems of an Experimental Power Reactor	367
<i>T J Suryono, Sudarno, S Santoso, R Maerani</i>	
MUF Calculation of Indonesian 10-MWt RDE Experimental HTGR Using Combined Uncertainty Approach	379
<i>Arief S. Adhi, Mohamad S.F. Husein, Pertiwi D. Winastri</i>	
Shear Wave Velocity (V_s) at Reactor Building, Experimental Power Reactor Indonesia	389
<i>Eko Rudi Iswanto, Theo Alvin Ryanto, Abimanyu BW Setiaji, Hadi Suntoko</i>	
V&V Methods Used in the Development of FPGA-Based I&C Systems for HTR-10	399
<i>R Maerani, TJ Suryono, S Santoso, JC Jung</i>	
Management of Site Evaluation: A Lesson Learnt of 10 MW HTGR Experimental Power Reactor (RDE) Project Site Licensing	409
<i>Yarianto S Budi Susilo</i>	
Study on the DLOFC Accident of the GEMINI+ Conceptual Design of HTGR Reactor with MELCOR and SPECTRA	419
<i>M Skrzypek, E Skrzypek, M Stempniewicz, J Malesa</i>	
Developing a Preliminary Design of FPGA Based Control Rod System for a High Temperature Experimental Power Reactor	433
<i>Sigit Santoso, Tulis Jojok Suryono, Restu Maerani, Dian Fitri Atmoko, Auralius Manurung</i>	

Author Index