MONDAY AM - I

Plenary Session
Monday, 26 February 2018, Salons A & B
08:15 – 09:00 Robert N. Coward, President (2017-2018) ANS
09:00 – 09:45 Dr. Terry C. Wallace, Jr., Director, LANL

MONDAY AM - II

Track/Session: Nuclear Fuels, Materials & Processes: Radioisotope fuels and fuels development
Monday, 26 February 2018, 10:15-12:00, Salon E
Session Chair: Jackie Lopez-Barlow (LANL)

10:20 24091 PREDICTING THE GAS PHASE CHEMISTRY INSIDE THE NEXT-GENERATION RTG, Christofer E. Whiting, Univ. of Dayton .....1

10:40 24166 IRRADIATION OF A PROTOTYPEIC NEPTUNIUM OXIDE MICROSPHERE TARGET IN NRU, William Robert Richmond, Canadian Nuclear Laboratories; Xiaolin Wang, Canadian Nuclear Laboratories; Geoffrey W. R. Edwards, Canadian Nuclear Laboratories; Aleksandar Vasić, Canadian Nuclear Laboratories; Fred Adams, Canadian Nuclear Laboratories .....5

11:00 24168 Preliminary Analysis of Pu-238 Production in TRIGA® Thermal Columns, Emory Colvin, Oregon State Univ.; Todd S. Palmer, Oregon State Univ.; Steven R. Reese, Oregon State Univ. .....9

11:20 24184 High-Temperature X-ray Diffraction Studies of Americium Oxide Surrogates, Emily Jane Watkinson, Univ. of Leicester; Jens Najorka, Natural History Museum; Richard M. Ambrosi, Univ. of Leicester; Mark J. Sarsfield, National Nuclear Laboratory; Emma Vernon, National Nuclear Laboratory; Tim P. Tinsley, National Nuclear Laboratory; Keith Stephenson, European Space Agency .....13
Track/Session: Nuclear Propulsion: Nuclear Thermal Propulsion system development and testing

Monday, 26 February 2018, 10:15-12:00, Salon C

Session Chairs: Marvin Barnes (NASA), Harold Gerrish (NASA SSC)

10:20 24180 Analytical Modeling of Heat Deposition in Propellant from Nuclear Thermal Propulsion, Alexander Aueron, Complex Systems Integration Lab, Univ. of Alabama in Huntsville; Dale L. Thomas, Univ. of Alabama in Huntsville; Jason Cassibry, Univ. of Alabama in Huntsville .......21

10:40 24206 Operational Characterization and Testing of NASA MSFC’s Compact Fuel Element Environmental Test (CFEET), Kelsa M. Benensky, Univ. of Tennessee; Marvin W. Barnes, NASA; David E. Bradley, NASA Marshall Space Flight Center; Carly J. Romnes, Univ. of New Mexico; Robert R. Hickman, NASA Marshall Space Flight Center .......25

11:00 24269 Lessons Learned from Recent Testing in the Nuclear Thermal Rocket Element Environmental Simulator, William J. Emrich, NASA Marshall Space Flight Center; Michael P. Schoenfeld, NASA/MSFC .......30


11:40 24322 BORGALLOY DEVELOPMENT STATUS FOR PASSIVE NTP REACTIVITY CONTROL, Paolo F. Venneri, Ultra-Safe Nuclear Corporation; Michael J. Eades, Ohio State Univ. .......38

Track/Session: Surface & Space Fission Power: Fission system concepts

Monday, 26 February 2018, 10:15-12:00, Salon D

Session Chair: Paolo Venneri (Ultrasafe Nuclear)

10:20 24081 PRELIMINARY DESIGN AND ANALYSIS OF MULTI-KILOWATT GAS COOLED SPACE NUCLEAR SYSTEM, Tao Meng, Harbing Engineering Univ.; Sichao Tan, Harbin Engineering Univ.; Yuhao He, Harbing Engineer-
Special Panel Session: Emerging Missions for Nuclear Technologies - Commercial and Governmental

Monday, 26 February 2018, 13:00-14:45, Salon E

Session Organizers: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)

Session Chairs: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)

Panel members: Ralph McNutt (Johns Hopkins Univ.), David Schurr (NASA), Christophe Fongarland (Airbus Defence and Space)

(See the Featured Panels description on pg 25 for additional information.)

Track/Session: Nuclear Propulsion: NTP system concepts

Monday, 26 February 2018, 13:00-14:45, Salon C

Session Chairs: Kelsa Benensky (U. Tenn.), Robert O'Brien (INL)

13:05 24182 DESIGN COMPARISON OF NUCLEAR THERMAL ROCKET CONCEPTS, David I. Poston, LANL .....62
13:25 24205 Evaluation of Novel Refractory Carbide Matrix Fuels for Nuclear Thermal Propulsion, Kelsa M. Benensky, Univ. of Tennessee; Carly J. Romnes, Univ. of New Mexico; Michael J. Eades, Ohio State Univ.; Paolo F. Venneri, Ultra-Safe Nuclear Corporation; Kurt A. Terrani, ORNL; Steven J. Zinkle, Univ. of Tennessee, Knoxville .....66


14:05 24212 Use of Molybdenum Cermet to Decrease Mass and Increase Thermal Performance of Nuclear Thermal Rockets, Wesley R. Deason, Ultra Safe Nuclear Corporation (USNC); Michael J. Eades, Ultra Safe Nuclear Corporation (USNC); Vishal K. Patel, Ultra Safe Nuclear Corporation (USNC) .....75

14:25 24215 MESOSCALE SIMULATIONS OF THERMAL TRANSPORT IN W-UO2 CERMET FUEL FOR NUCLEAR THERMAL PROPULSION, Marina Ferreira Fonseca Sessim, Penn State Univ.; Marvin W. Barnes, NASA Marshall Space Flight Center; Robert R. Hickman, NASA Marshall Space Flight Center; Michael R. Tonks, Univ. of Florida .....78

Track/Session: Surface & Space Fission Power: Fission system development and testing
Monday, 26 February 2018, 13:00-14:45, Salon D
Session Chair: Patrick McClure (LANL)

13:05 24146 Radiation Tolerance Testing of Electronics for Space Fission Power Systems, Max F. Chaiken, NASA Glenn Research Center; Marc A. Gibson, NASA Glenn Research Center .....82

13:25 24238 KILOPOWER KRUSTY FISSION POWER DEMONSTRATION UPDATE, Donald Palac, NASA GRC; Marc A. Gibson, NASA GRC; Lee S. Mason, NASA GRC; Patrick McClure, LANL; R. Chris Robinson, Y-12. .....86


14:05 24256 PREDICTED PERFORMANCE OF THE KRUSTY REACTOR, David I. Poston, LANL .....95
MONDAY PM - II

Track/Session: Nuclear Fuels, Materials & Processes: Radioisotope fuels and fuels development (cont'd)
Monday, 26 February 2018, 15:15-17:00, Salon E
Session Chair: Dave DePaoli (ORNL)


15:40 24213  SORBENT WIPES FOR USE IN HEAT SOURCE PLUTONIUM OXIDE PROCESSING, Rebecca V. Hollis, LANL; W. Kirk Hollis, LANL; Elena Atencio, LANL; Jacqueline N. Hargraves, LANL; Helen Milenski, LANL; Lisa Meyers, LANL ....102

16:00 24217  Overview of Process Improvements and Dose Reduction Strategies for LANL's Heat Source Plutonium Production Operations, Elizabeth A. Bluhm, LANL ....106

16:20 24221  Converting Research and Development Facilities and Operations into a 238Pu Production Process, Emory D. Collins, ORNL; Robert M. Wham, ORNL .....110

Track/Session (combined):
Nuclear Propulsion: NTP development lessons learned and best practices
Nuclear Propulsion: NTP systems technologies
Monday, 26 February 2018, 15:15-17:00, Salon C
Session Chairs: Steven Howe (Howe Industries), Stan Borowski (NASA)

15:20 24202  Preliminary investigation of thermal-hydraulic characteristic in pellet bed reactor for nuclear thermal propulsion, Yu Ji, Tsinghua Univ.; Jun Sun, Tsinghua Univ.; Zeguang Li, Tsinghua Univ.; Minggang Lang, Institute of Nuclear and New Energy Technology; Lei Shi, Tsinghua Univ. .....114


16:00 24239  CONCEPTUAL DESIGN OF A HOMOGENEOUS FOAM CORE FAST REACTOR, Daniel W. Gould, Kansas State Univ.; Richard L. Reed, Kansas State Univ. .....122
16:20  24340  OVERVIEW OF COMPUTATIONAL ANALYSIS OF NUCLEAR THERMAL PROPULSION ROCKET (nTPR) FUEL AND PROSPECTIVE COATING, Valerie Lawdensky, U. Nevada Las Vegas; William Culbreth, U. Nevada Las Vegas .....125

16:40  24348  HOT HYDROGEN TESTING & CERMET MATERIALS DEVELOPMENT SUPPORTING NUCLEAR THERMAL PROPULSION, Joseph D. Elkins, Georgia Inst. of Technology; Kelsa M. Benensky, Univ. Tennessee; Dennis Tucker, NASA MSFC; Marvin W. Barnes, NASA, MSFC .....129

Track/Session:  Surface & Space Fission Power: Space fission system technologies, including power conversion

Monday, 26 February 2018, 15:15-17:00, Salon D

Session Chair:  Jonathan Witter (BWXT)

15:20  24178  STUDY ON THE METHOD OF TOPAZ-II SHIELDING CALCULATION, Jing Shao, China institute of atomic energy; Sun Zheng, China institute of atomic energy; Zhang Yan, China institute of atomic energy; Zhao Shouzhi, China institute of atomic energy; Xie Jiachun, China institute of atomic energy; Guo Jian, China institute of atomic energy .....134

15:40  24183  Progress On Commercializable 10 kg/kW Brayton Space Nuclear Power Conversion Systems, Christopher G. Morrison, Ultra Safe Nuclear Corporation; Michael Eades, Ultra Safe Nuclear Corporation .....138


16:20  24252  FLOW BOILING AT SUBATMOSPHERIC PRESSURE, Nathan Colgan, Univ. of Illinois Urbana Champaign; Joseph L. Bottini, Univ. of Illinois; Caleb S. Brooks, Univ. of Illinois .....146

Reception at Palace Station (included in registration)

18:00-21:00  Please join us in Salons A&B for a reception
Tuesday, 27 February 2018

TUESDAY AM - I

Plenary Session
Tuesday, 27 February 2018, Salons A & B
08:15 – 09:00 Dr. Jonathan Cirtain, VP Advanced Technologies & Director of Space, BWXT
09:00 – 09:45 John Casani, Special Assistant to the Director, JPL

TUESDAY AM - II

Track/Session: Nuclear Fuels, Materials & Processes: Cladding, Containment, and Aeroentry protective materials
Tuesday, 27 February 2018, 10:15-12:00, Salon E
Session Chair: Chris Whiting (UDRI)

10:20 24172 Investigation of a Replacement for Fine Weave Pierced Fabric in Space Generators, Laura Hawkins, Texas A&M Univ.; Syed Zameeruddin Ma-zharuddin, Univ. of Southern California; Matthew Wells, Univ. of Tulsa; Dar-rell Shien-Lee Cheu, Purdue Univ.; Steve Herring, Center for Space Nuclear Research .....150

10:40 24195 AEROSHELL RE-ENTRY MODELLING FOR THE EUROPEAN SPACE NUCLEAR POWER PROGRAM, Richard M. Ambrosi, Univ. of Leicester; Benjamin Foxcroft, Univ. of Leicester; Alessandra Barco, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Emily Jane Watkinson, Univ. of Leicester; Alexander Godfrey, Lockheed Martin UK; Colin Stroud, Lockheed Martin UK; Christophe Fongarland, Ariane Group; Martin Libessart, Ariane Group; Caroline Nguyen, Ariane Group; James Merrifield, Fluid Gravity Engineering Ltd; Keith Stephenson, European Space Agency .....154

11:00 24196 AEROSHELL RE-ENTRY AND MATERIAL TESTING FOR THE EUROPE-AN SPACE NUCLEAR POWER PROGRAM, Richard M. Ambrosi, Univ. of Leicester; Alessandra Barco, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Emily Jane Watkinson, Univ. of Leicester; Christophe Fongarland, Ariane Group; Martin Libessart, Ariane Group; Rose-Marie Besnier, Ariane Group; Thierry Pichon, Ariane Group; Daniel Philip Kramer, Univ. of Dayton;
Track/Session: Radioisotope Power Systems: Radioisotope system development and testing

Tuesday, 27 February 2018, 10:15-12:00, Salon C

Session Chairs: Dirk Cairns-Gallimore (DOE-NE), Dr. Richard Ambrosi (U. of Leicester)

10:20 24169 THE CONSIDERATION OF FUELING AND TESTING A DYNAMIC RPS, Shad Davis, Idaho National Laboratory; Kelly L. Lively, Idaho National Laboratory; Kendall J. Wahlquist, Idaho National Laboratory .....170

10:40 24188 Development of High Efficiency Segmented Couples For Space Applications, Fivos Drymiotis, NASA JPL; Jean-Pierre Fleurial, JPL - CIT; Sabah Bux, JPL - CIT; Samad A. Firdosy, JPL - CIT; Kurt Star, JPL - CIT; Ike Chi, JPL - CIT; Vilupanur Ravi, JPL - CIT; Billy Chun-Yip Lee, JPL - CIT; Sevan Chanakian, Michigan State Univ.; Dean Cheikh, Univ. of California Los Angeles; Kathy Lee, JPL - CIT; Kevin Yu, JPL - CIT; Obed Villalpando, JPL - CIT; Kevin Smith, JPL - CIT; David Uhl, JPL - CIT; Chen-Kuo Huang, JPL - CIT; Jong-Ah Paik, JPL - CIT; Zi-Kui Liu, Penn State Univ.; Jorge Paz Soldan Palma, Penn State Univ.; Yi Wang, Penn State Univ.; Xiao Yu Chong, Penn State Univ.; Frances Hurwitz, NASA Glenn Research Center; Dongming Zhu, NASA Glenn Research Center; Haiquan Guo, NASA Glenn Research Center; Gustavo Costa, NASA Glenn Research Center .....174

11:00 24224 IMPROVING THE PERFORMANCE OF LANTHANIDE THERMOELECTRIC MATERIALS, Sabah Bux, JPL, California; Dean Cheikh, JPL/CIT; Brea Hogan, JPL/CIT; Trinh Vo, JPL/CIT; Paul Von Allmen, JPL/CIT; Kathleen Lee, JPL/CIT; Bruce Dunn, Univ. of California Los Angeles; Jean-Pierre Fleurial, JPL/CIT .....178

11:20 24229 Qualifying thermoelectric modules for radioisotope power systems using impedance spectroscopy, Ramy Mesalam, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Richard M. Ambrosi, Univ. of Leicester; Daniel Philip Kramer, Univ. of Dayton; Keith Stephenson, European Space Agency .....182
11:40 24346 TURBO-BRAYTON CONVERTER FOR RADIOISOTOPE POWER SYSTEMS, Jeffrey J. Breedlove, Creare LLC; Mark V. Zagarola, Creare LLC; Thomas M. Conboy, Creare LLC; Ashwin Shah, Sest, Inc.; Cheng-Yi Lu, Aerojet Rocketdyne; Mohamed S. El-Genk, Institute for Space and Nuclear Power Studies, U. New Mexico; Timothy Schriener, Institute for Space and Nuclear Power Studies, U. New Mexico. .....185

Track/Session: Nuclear Missions Applications & Mission Support: Space fission, NTP, and RPS mission applications and benefits
Tuesday, 27 February 2018, 10:15-12:00, Salon D
Session Chair: John Hamley (NASA GRC)


10:40 24214 RPS UTILIZATION - A BALANCE OF PLUTONIUM SUPPLY VERSUS MISSION DEMAND, Thomas Sutliff, NASA .....193

11:00 24295 Radioisotope Power Systems to Enable Extended Lunar Science and In-Situ Resource Utilization Missions, Robert L. Cataldo, NASA Glenn Research Center .....197

11:20 24301 Update on Approaches for LEU NTP Engine Systems and Exploration Implications, Claude Russell Joyner, Aerojet Rocketdyne; Michael Eades, Ultra Safe Nuclear Corporation; Daniel Levack, Aerojet Rocketdyne; James Horton, Aerojet Rocketdyne; Tyler Jennings, Aerojet Rocketdyne; Timothy Kolan, Aerojet Rocketdyne; Matthew Long, Aerojet Rocketdyne; Frederick Widman, Aerojet Rocketdyne .....201

TUESDAY PM - I

Special Panel Session: Alternative Fission Development Scenarios
Tuesday, 27 February 2018, 13:00-14:30, Salon E
Session Organizers: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)
Session Chairs: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)
Panel members: Lee Mason (NASA GRC), Mike Houts (NASA MSFC), Pat McClure (LANL)
(See the Featured Panels description on pg 26 for additional information.)
Track/Session: Radioisotope Power Systems: Radioisotope development lessons learned and best practices

Tuesday, 27 February 2018, 13:00-14:30, Salon C

Session Chairs: Kelly Lively (INL)

13:10 24070 OPTIMIZING MMRTG FUELING AND TESTING FOR FUTURE CAMPAIGNS, Justin Rhys Mansell, Purdue Univ.; Jessica Berry, Colorado School of Mines; Jacob Quint, Univ. of Nebraska-Lincoln; Meng-Jen Wang, Virginia Tech .....211


13:50 24167 Radioisotope Power System Dose Estimation Tool, Michael B. R. Smith, Univ. of Tennessee .....219

14:10 24204 CONCEPTUAL DUAL THERMOELECTRIC SPACE RADIOISOTOPE POWER SYSTEM, Daniel P. Kramer, Univ. of Dayton; Richard M. Ambrosi, Univ. of Leicester .....223

Track/Session: Nuclear Missions Applications & Mission Support: Nuclear mission development, system integration, and support processes

Tuesday, 27 February 2018, 13:00-14:30, Salon D

Session Chair: Bhavya Lal (IDA S&T Policy Institute)

13:10 24199 SCIENCE ENABLED BY FISSION KILOPOWER AT TITAN, Ralph D. Lorenz, Johns Hopkins Applied Physics Laboratory .....227


Track/Session: Nuclear Fuels, Materials & Processes: LEU and HEU fuels, fuel forms, and fuels availability

Tuesday, 27 February 2018, 15:00-17:05, Salon E

Session Chair: Chris Whiting (UDRI)

15:25 24171 Demonstration of subscale Cermet fuel specimen fabrication approach using Spark Plasma Sintering and diffusion bonding, Marvin W. Barnes, NASA; Dennis Tucker, NASA; Kelsa M. Benensky, Univ. of Tennessee .....239

15:45 24210 Fuel pellet fracture as a function of age, Roberta N. Mulford, Los Alamos National Security .....243

Track/Session: Radioisotope Power Systems: Radioisotope system concepts
Tuesday, 27 February 2018, 15:00-17:05, Salon C
Session Chairs: Dr. Emily Jane Watkinson (U. Leicester), Young Lee (JPL)

15:05 24176 Design, development and testing of an 241Am-fuelled RHU for the ESA program, Alessandra Barco, Univ. of Leicester; Richard M. Ambrosi, Univ. of Leicester; Tony Crawford, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Alexander Godfrey, Lockheed Martin UK; Colin Stroud, Lockheed Martin UK; K. Stephenson, ESA; Christopher Bicknell, Univ. of Leicester; Emily-Jane Watkinson, Univ. of Leicester; Ramy Mesalam, Univ. of Leicester; Mark John Sarsfield, national nuclear laboratory; Tim P. Tinsley, National Nuclear Laboratory; Maximilian Chowanietz, Advanced Structural Dynamics Evaluation Centre (ASDEC); Martin Cockrill, Advanced Structural Dynamics Evaluation Centre (ASDEC) .....246

15:25 24177 Design and architecture of the 241Am-fuelled RTG for the ESA program, Alessandra Barco, Univ. of Leicester; Richard M. Ambrosi, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Tony Crawford, Univ. of Leicester; Marie-Claire Perkinson, Airbus; Christopher Burgess, Airbus; K. Stephenson, ESA; Christopher Bicknell, Univ. of Leicester; Emily-Jane Watkinson, Univ. of Leicester; Ramy Mesalam, Univ. of Leicester; Jonathan Sykes, Univ. of Leicester .....250

15:45 24185 THE EUROPEAN SPACE NUCLEAR POWER PROGRAM: DEVELOPMENT OF RADIOISOTOPE THERMOELECTRIC GENERATORS AND HEATER UNITS, Richard M. Ambrosi, Univ. of Leicester; Hugo Williams, Univ. of Leicester; Emily Jane Watkinson, Univ. of Leicester; Alessandra Barco, Univ. of Leicester; Ramy Mesalam, Univ. of Leicester; Edward A. Crawford, Univ. of Leicester; Christopher Bicknell, Univ. of Leicester; Jonathan Sykes, Univ. of Leicester; Keith Stephenson, European Space Agency; Marie-Claire Perkinson, Airbus UK; Christopher Burgess, Airbus UK; Michael Reece, Queen Mary Univ. of London; Kan Chen, Queen Mary Univ. of London; Kevin Simpson, European Thermodynamics Ltd; Mark Robbins, European Thermodynamics Ltd; Richard Tuley, European Thermodynamics
Lto; Stephen Gibson, Lockheed Martin UK; Alexander Godfrey, Lockheed Martin UK; Colin Stroud, Lockheed Martin UK; Mark Sarsfield, National Nuclear Laboratory; Tim Tinsley, National Nuclear Laboratory; Christophe Fongarland, Ariane Group; Martin Libessart, Ariane Group; Daniel Philip Kramer, Univ. of Dayton; Chadwick Douglas Barklay, Univ. of Dayton; Christopher E. Whiting, Univ. of Dayton .....254

16:05 24186 Preliminary Performance Assessment of Americium-241 as Fuel in Radioisotope Thermoelectric Generators for Deep Space Exploration, Jeremiah S. Dustin, Univ. of Idaho; Bob Borrelli, Univ. of Idaho .....258

16:25 24193 STUDY ON THE DESIGN OF PO-210 BASED RADIOISOTOPE THERMOELECTRIC GENERATORS FOR IMPLEMENTATION ON LOW-EARTH ORBIT SATELLITES, Jonathan Gjemso, Oregon State Univ.; Cliff H. Ghiglieri, Colorado School of Mines .....262

16:45 24201 STUDY ON THE DESIGN OF RTG FOR KOREAN SPACE MISSION, Jinta Hong, Korea Atomic Energy Research Institute; Kwang-Jae Son, Korea Atomic Energy Research Institute; Jong-Bum Kim, Korea Atomic Energy Research Institute; Jong-Han Park, Korea Atomic Energy Research Institute; Jin-Joo Kim, Korea Atomic Energy Research Institute .....267

Track/Session: Nuclear Missions Applications & Mission Support: Nuclear application lessons learned and best practices - overcoming the impediments to using nuclear technologies in space

Tuesday, 27 February 2018, 15:00-17:05, Salon D

Session Chair: Tina Norwood (NASA)

15:05 24044 Nuclear Safety Launch Approval: Multi-Mission Lessons Learned, Yale Chang, JHU/APL .....271

15:25 24247 Evolution of the Space Nuclear Launch Safety Review Process, Reina Buenconsejo, STP; Susannah Vale Howieson, IDA Science and Technology Policy Institute; Jonathan Behrens, IDA STPI; Bhavya Lal, Science and Technology Policy Institute .....276

15:45 24248 CURRENT STATUS AND FUTURE OF SPACE NUCLEAR POWER, Bhavya Lal, Science and Technology Policy Institute; Reina Buenconsejo, Science and Technology Policy Institute; Jonathan Behrens, Science and Technology Policy Institute; Susannah V. Howieson, Science and Technology Policy Institute .....279
Wednesday, 28 February 2018

**WEDNESDAY AM - I**

**Plenary Session**  
Wednesday, 28 February 2018, Salons A & B  
08:15 – 09:00 Sam Gunderson, Manager, Business Development, Blue Origin  
09:00 – 09:45 Dr. Jeffrey Sheehy, Chief Engineer, STMD, NASA

**WEDNESDAY AM - II**

**Track/Session:  Surface & Space Fission Power: Space fission development lessons learned and best practices**  
Wednesday, 28 February 2018, 10:15-12:00, Salon E  
Session Chair: Susan Voss (GNNA)

10:20 24154 FISSION POWER SOURCES FOR SPACE AND HUMAN PLANETARY EXPLORATION, Susan S. Voss, Global Nuclear Network Analysis, LLC; Donald Palac, NASA GRC; Marc A. Gibson, NASA GRC ....284

10:40 24321 Avoiding Highly Enriched Uranium for Space Power, Alan J. Kuperman, NPPP .....289

**Track/Session:  Radioisotope Power Systems: Radioisotope power system technologies, including power conversion**  
Wednesday, 28 February 2018, 10:15-12:00, Salon C  
Session Chairs: Dr. Chadwick Barklay (Univ. of Dayton Research Institute)


10:40 24209 RECENT UNIV. OF DAYTON AND UNIV. OF LEICESTER COLLABORATIONS RELATED TO RADIOISOTOPE POWER SYSTEMS (RPS) AND NUCLEAR ENERGY TECHNOLOGY, Daniel P. Kramer, Univ. of Dayton;
11:00 24223 ADVANCED THERMOELECTRIC MATERIALS FOR INFUSION INTO A POTENTIAL NEXT GENERATION RADIOISOTOPE THERMOELECTRIC GENERATOR, Kurt Star, JPL; Sabah Bux, JPL, California; Fivos Drymiotis, NASA JPL; Sevan Chanakian, Michigan State Univ.; Dean Cheikh, Univ. of California Los Angeles; James Ma, JPL, California; Kathleen Lee, JPL-CIT; David Uhl, JPL-CIT; Chen-Kuo Huang, JPL-CIT; Jennifer Ni, JPL-CIT; Jong-Ah Paik, JPL-CIT; Samad Firdosy, JPL-CIT; Vilupanur Ravi, California State Polytechnic Univ., Pomona; Jean-Pierre Fleurial, JPL-CIT .....

11:20 24243 STATUS OF DYNAMIC POWER CONVERSION TECHNOLOGY DEVELOPMENT FOR RPS, Salvatore Oriti, NASA Glenn Research Center .....

11:40 24316 CHARACTERIZATION OF PLATINUM POWDER FOR LIGHT WEIGHT RADIOACTIVE HEATER UNIT FRIT PRODUCTION, Brian Friske, Oak Ridge National Lab .....

Track/Session: Nuclear Missions Applications & Mission Support: Nuclear launch safety and approval processes, including NEPA compliance

Wednesday, 28 February 2018, 10:15-12:00, Salon D

Session Chair: Reina Buenconsejo (IDA S&T Policy Institute)

10:20 24069 A SIMPLIFIED APPROACH FOR LAUNCH SAFETY APPROVAL FOR SMALL FISSION POWER REACTORS, Allen L. Camp, Consultant; Patrick McClure, LANL .....

10:40 24090 Developing a Launch Approval Process for Nuclear Fission Reactors: Lessons Learned from Risk Mitigation and Approval Processes in Other Sectors, Jonathan Behrens, IDA STPI; Reina Buenconsejo, IDA Science and Technology Policy Institute; Bhavya Lal, IDA Science and Technology Policy Institute; Susannah Howieson, IDA Science and Technology Policy Institute .....

11:00 24222 IMPROVING THE NUCLEAR LAUNCH APPROVAL PROCESS, Peter McCallum, NASA; Kelli Markham, DOE .....

11:20 24250 LEGAL REQUIREMENTS OF NUCLEAR LAUNCH APPROVAL, Susannah Vale Howieson, IDA Science and Technology Policy Institute; Reina Buenconsejo, STP; Bhavya Lal, Science and Technology Policy Institute; Jonathan Behrens, IDA STPI .....

11:40 24297 Streamlining NASA NEPA Process For Radioisotope Power System Enabled Missions, Tina Borghild Norwood, NASA; Thomas M. Hayes, NASA Headquarters; Margaret C. Steiner, George Washington Univ. .....

Richard M. Ambrosi, Univ. of Leicester; Emily Jane Watkinson, Univ. of Leicester; Steven M. Goodrich, Univ. of Dayton; Chadwick D. Barklay, Univ. of Dayton; Emma Vernon, National Nuclear Laboratory; Mark J. Sarsfield, national nuclear laboratory; Tim P. Tinsley, National Nuclear Laboratory
Special Panel Session: New Initiatives in Nuclear Technologies

Wednesday, 28 February 2018, 13:00-14:45, Salon E

Session Organizers: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)

Session Chairs: Jorge Navarro (ORNL), Leonard Dudzinski (NASA)

Panel members: Tim Tinsley (NNL), Paolo Venneri (Ultra Safe Nuclear Corp.), Larry Forsley (Global Energy Corp)

(See the Featured Panels description on pg 27 for additional information.)

Track/Session: Nuclear Propulsion: NTP system concepts (cont’d)

Wednesday, 28 February 2018, 13:00-14:45, Salon C

Session Chairs: Wesley Deason (USNC), Nicholas Smith (Southern Research)

13:05 24233 Modeling of Compressed Fission Targets for Pulsed Fission-Fusion Hybrids, Kevin John Schillo, Univ. of Alabama Huntsville; Jason Cassibry, Univ. of Alabama in Huntsville; Rob B. Adams, Marshall Space Flight Center ..335

13:25 24240 Fuel Temperature Considerations Due to In-Element Peaking of NTP Fuel, Vishal Patel, Idaho National Laboratory; Michael Eades, USNC; Sam Judd, USNC ....338

13:45 24241 NTR Performance Sensitivity Studies of Thermal-Hydraulic Parameters, Andrew Christopher Denig, Georgia Institute of Technology; Jonathan Tyler Gates, Georgia Institute of Technology; Rahat Ahmed, Georgia Institute of Technology; Vedant Kiritkumar Mehta, Georgia Institute of Technology; Dan Kotlyar, Georgia Institute of Technology .....341

14:05 24254 NUCLEAR TESTING AND SAFETY COMPARISON OF NUCLEAR THERMAL ROCKET CONCEPTS, David I. Poston, LANL .....345

14:25 24296 Feasibility of Low Thrust, Low-Enriched Uranium Nuclear Thermal Propulsion, Samantha Rawlins, Korea Advanced Institute of Science & Technology; Yonghee Kim, Korea Advanced Institute of Science and Technology .....349
Track/Session: Nuclear Fuels, Materials & Processes: Radioisotope fuels and fuels development (cont’d)

Wednesday, 28 February 2018, 13:00-14:45, Salon D

Session Chair: Tom Sutliff (NASA)

13:05 24225 UNDERSTANDING THE CAUSE OF PELLET FRACTURE DURING PRODUCTION OF PU-238 OXIDE HEAT SOURCES THROUGH THE COUPLING OF EXPERIMENTATION AND MODEL DEVELOPMENT, Adam J. Parkison, LANL; Ursula Carvajal-Nunez, LANL; Faith Anne Carver, LANL; Christopher Matthews, LANL; Andrew T. Nelson, LANL .....352

13:25 24230 Logistical Constraints Must Be Considered In Simulation of Pu-238 Supply Process, Steven Randall Sherman, ORNL .....356

13:45 24231 Progress in Chemical Processing for Production of Plutonium-238 from Irradiated Neptunium Oxide Cermet Targets, David DePaoli, ORNL; Dennis Benker, Oak Ridge National Lab.; Laetitia Delmau, ORNL; Emory D. Collins, ORNL; Robert M. Wham, ORNL .....360

14:05 24244 OPTIMIZATION OF PLUTONIUM-238 PRODUCTION IN THE ADVANCED TEST REACTOR FOR RADIOISOTOPE THERMOELECTRIC GENERATORS IN DEEP SPACE EXPLORATION APPLICATIONS, Lucas Beve-ridge, Idaho State Univ.; Joshua H. Rhodes, Missouri Univ. of Science and Technology; Grace A. Marcantel, Texas A&M Univ.; Dominik A. Fritz, Rensselaer Polytechnic Institute; Ashoak N. Nagarajan, Idaho State Univ. .....364

14:25 24251 The Evolution of HFIR Cermet Pu-238 Production Targets, Richard H. Howard, ORNL .....368

WEDNESDAY PM - II

Track/Session: Radioisotope Power Systems: Radioisotope system concepts (cont’d)

Wednesday, 28 February 2018, 15:15-17:00, Salon C

Session Chairs: Dr. Emily Jane Watkinson (U. Leicester), Young Lee (JPL)

15:20 24242 DEVELOPMENT OF A 1-WATT STIRLING CONVERTOR FOR SMALL RPS, Scott Wilson, NASA Glenn Research Center; Steven Michael Geng, NASA Glenn Research Center; Nicholas A. Schifer, NASA Glenn Research Center; Lawrence Penswick, Consultant .....372

15:40 24282 SMART CRITICAL FISSION CELL FOR SPACE AND TERRESTRIAL APPLICATIONS, Yasser Ragab Shaban, Guangdong Provincial Strategic Alliance of Medical Devices Innovation .....376
Banquet at Palace Station (included in registration)

18:00-21:00 Please join us in Salons A&B for a dinner banquet, and an exciting and informative presentation on the history of the Rover / NERVA program by Alan Carr, the LANL Historian

Thursday, 1 March 2018

Nevada National Security Site (NNSS) Technical Tour

07:00-17:30 Meet the bus in front of Palace Station Hotel & Casino at 07:00
Limit 40 persons on tour
All personnel must be in possession of a “Real ID” form of identification
(See the Technical Tour description on pg 12 for additional information)