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Proceedings of Nuclear and Emerging Technologies for Space (NETS-2022)

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- 537 Ideas for Infusing OSAM into Nuclear Electric Propulsion Architectures—*Julia Cline (NASA Langley Research Center), John Dorsey (NASA Langley Research Center), David Kang (NASA Langley Research Center), Bill Doggett (NASA Langley Research Center), Danette Allen (NASA Langley Research Center)*
- 538 Mission Assurance for a Nuclear Thermal Propulsion First Flight Vehicle—*Sophonias Teshome (Aerospace Corp.), Roland Duphily (Aerospace Corp.), Norman Lao (Aerospace Corp.)*
- 539 Space Environment Neutron Production in Space Nuclear Reactors—*W. Randy Bell (Aerospace Corp.), T. Paul O'Brien (Aerospace Corp.), Mark Looper (Aerospace Corp.), Eric Davis (Aerospace Corp.)*
- 541 Aerogel Supported Fission Fragment Rocket Engine Core—*Ryan Weed (Positron Dynamics), Matthew Horsley (LLNL), George Chapline (LLNL)*
- 542 Material and Modal Analysis of the Rotating Cylinders and Turbine Blades of NASA's Centrifugal Nuclear Thermal Rocket—*Tristan Carter (NASA Marshall Space Flight Center), Manav Dave (UAH Propulsion Research Center)*
- 543 Application of Improved Heat Exchanger Geometry to Nuclear Thermal Rocket Engines—*Spencer Christian (Ohio State), Casey Ruckman (Ohio State), Jacob Stonehill (Ohio State), Preston Williams Jr. (Ohio State), Caleb Whitacre (Ohio State), John M. Horack (Ohio State)*
- 544 Non-Uniform Heating Impact on Specific Impulse in Nuclear Thermal Propulsion Engines—*Spencer Christian (Ohio State), John M. Horack (Ohio State)*
- 545 Coverage to Launch: Updating Nuclear Liability Laws to Empower Development of Space Technologies—*Sid Fowler (Pillsbury Winthrop Shaw Pittman), Jeffrey S. Merrifield (Pillsbury Winthrop Shaw Pittman), Vince C. Zabielski (Pillsbury Winthrop Shaw Pittman)*

- 546 Development of a Nuclear Thermal Rocket I&C Testbed—*Brandon Wilson (ORNL), Hayden Sutton (Univ. Tennessee, Knoxville), Bart Murphy (ORNL), N. Dianne Bull Ezell (ORNL)*
- 547 An Extremely High Isp Spacecraft Propulsion System—*Lawrence Forsley (Global Energy Corp.), Theresa Benyo (NASA Glenn Research Center), Pamela Mosier-Boss (Global Energy Corp.), Leonard Dudzinski (NASA Headquarters)*
- 548 Anti-Criticality Assessments for the Government Testing Reference NTP Design—*Mike Savela (BWXT Advanced Technologies), Daniel Newell (BWXT Advanced Technologies), Patrick Hunt (BWXT Advanced Technologies), Randall Paliga (BWXT Advanced Technologies), Matthew Ales (BWXT Advanced Technologies), Shane Stimpson (BWXT Advanced Technologies)*
- 549 Alpha Particle Propulsion for Overtaking Voyager-1 in 40 years—*Naoyuki Takaki (Tokyo City Univ.), Hiroki Yaguchi (Tokyo City Univ.), Yuki Sakurai (Tokyo City Univ.), Keigo Hasegawa (Tokyo City Univ.)*
- 550 Abeona: Nuclear-Electric Propulsion Vehicle for Missions to Neptune and Outer Planets—*Geoffrey A. Landis (NASA Glenn Research Center), Steven R. Oleson (NASA Glenn Research Center)*
- 551 Advanced Missions**
- 552 Accessing Icy World Oceans Using Lattice Confinement Fusion Fast Fission—*Theresa L. Benyo (NASA Glenn Research Center), Lawrence P. Forsley (Global Energy Corp.)*
- 558 Radioisotope-Enabled In-Ice RF Data Relay for a Europa Cryobot—*Ralph Lorenz (Johns Hopkins APL), Kate Craft (Johns Hopkins APL), G. Wesley Patterson (Johns Hopkins APL), H. Brian Sequeira (Johns Hopkins APL), Robert Stilwell (Johns Hopkins APL), Robert F. Coker (Johns Hopkins APL), Matt Walker (Planetary Science Institute)*
- 565 Pulsed Plasma Rocket: Improving Space Capabilities with Novel Neutronics Controls—*Steve D. Howe (Howe Industries), Troy Howe (Howe Industries), Nathan Blaylock (Howe Industries)*
- 570 NASA Innovative Advanced Concepts: Mission Studies by the NASA Glenn COMPASS Team—*Steven R. Oleson (NASA Glenn Research Center), Geoffrey A. Landis (NASA Glenn Research Center)*
- 575 ExtraSolar Object Sample Return Enabled by Ultra Power Dense EmberCore Radioisotope Electric Propulsion -- NIAC Phase I Study Summary—*Christopher Morrison (USNC-Tech)*
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- 592 Zirconium Carbide Circular Prismatic Core Geometries by Spark Plasma Sintering -- An Empirical Perspective—*Caen Ang (USNC-Tech), Tom Hinklin (USNC-Core), Brandon Connor (Univ. Tennessee, Knoxville), Cameron Hilliard (Univ. Tennessee, Knoxville), Sarah Yue (USNC-Tech), Tim Ironman (Univ. Tennessee, Knoxville), Ethan Chaleff (USNC-Tech), Gavin Garside (USNC-Core)*
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- 605 Lightning Talks: Materials and Modeling**
- 606 High Temperature Furnace Testing of Space Reactor Materials in Relevant Gas Environments—*William T. Searight (Penn State), Leigh Winfrey (Penn State)*
- 607 Thermophysical Properties of Polycrystalline Pyrolytic Graphite for Radioisotope Space Power Systems—*Hsin Wang (ORNL), Frederic Vautard (ORNL), Glenn Romanoski (ORNL), George Ulrich (ORNL), Mark Breloff (Minteq Int'l)*
- 608 Developing Carbon-Carbon Heat Exchange Tubes for a Nuclear Thermal Propulsion Fuel Element—*Julia Cline (NASA Langley Research Center)*
- 609 Hot Hydrogen Compatibility of Spark Plasma Sintered NbC and (ZrNbW)C for Nuclear Thermal Propulsion—*Martin Volz (NASA Marshall Space Flight Center), Ryan Wilkerson (NASA Marshall Space Flight Center), Arne Croell (Univ. Alabama, Huntsville), Jamelle Williams (NASA Marshall Space Flight Center), Brian Taylor (NASA Marshall Space Flight Center), Jhonathan Rosales (NASA Marshall Space Flight Center)*

- 610 Impact of Matrix Microstructure on Fuel Loss from Nuclear Thermal Propulsion Cermet Fuel—*Vishal Yadav (Univ. Florida), Jhonathan Rosales (Marshall Space Flight Center), Michael Tonks (Univ. Florida)*
- 611 Thermophysical and Mechanical Properties Testing of Cermets and Cercers for Nuclear Thermal Propulsion—*Neal D. Gaffin (Univ. Tennessee, Knoxville), Justin Milner (NASA Glenn Research Center), Kelsa Palomares (Analytical Mechanics Assoc.), Timothy Ironman (Univ. Tennessee, Knoxville), Steven J. Zinkle (Univ. Tennessee, Knoxville)*
- 612 CORTES Software: Leveraging Data Science and Multi-Physics Simulations for Scalable Reactor Design Optimization—*Ross Pivovar (BWX Technologies), Ryan Swanson (BWX Technologies), Shane Stimpson (BWX Technologies), Cole Gentry (BWX Technologies)*
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- 614 Overview and Demonstration of the Thermal Hydraulics and Thermo Mechanics ntpThermo Code—*Matt Krecicki (Georgia Tech), Dan Kotlyar (Georgia Tech)*
- 615 Overview and Demonstration of the pyIsoDep Depletion Code—*Matt Krecicki (Georgia Tech), Dan Kotlyar (Georgia Tech)*
- 616 Overview and Demonstration of the NTPSteadyFoam Multi-Physics Code—*Matt Krecicki (Georgia Tech), Jim Wang (Georgia Tech), Dan Kotlyar (Georgia Tech)*
- 617 Modernization of Machining Capabilities for Production of CBCF Components—*Nidia C. Gallego (ORNL), George Ulrich (ORNL)*
- 618 Progress of Fabricating Heritage Silicon Germanium Unicouples—*Billy Li (Jet Propulsion Laboratory), Sutinee Sujittosakul (Jet Propulsion Laboratory), Vilupanur A. Ravi (Jet Propulsion Laboratory), Ike Chi (Jet Propulsion Laboratory), Jean-Pierre Fleurial (Jet Propulsion Laboratory)*
- 619 The Whats, the Whys, and the Hows of MARM: MCNP and ABAQUS Based Reactor Multiphysics—*Vedant K. Mehta (LANL), Sara Newman (LANL), Jerawan Armstrong (LANL), Dasari V. Rao (LANL)*
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- 621 Automation and Optimization Aspects of MCNP and Abaqus Based Reactor Multiphysics (MARM) Simulations—*Sara Newman (LANL), Jerawan Armstrong (LANL), Dasari V. Rao (LANL), Vedant K. Mehta (LANL)*
- 622 Towards Laser-Based Additive Manufacturing of Ultra-High Temperature Ceramics: Laser-Material Interactions of Zirconium Carbide—*Alexander E. Wilson-Heid (LLNL), R. Joey Griffiths (LLNL), Aiden A. Martin (LLNL), Kiel S. Holliday (LLNL), Jason R. Jeffries (LLNL)*
- 623 Qualification Through X-Ray CT of an Advanced Manufactured Particle Fuel Form Surrogate—*Travis McFalls (BWX Technologies), Ryan Kitchen (BWX Technologies), Daniel Galicki (BWX Technologies), John Salasin (BWX Technologies)*
- 624 Space Nuclear Propulsion (SNP)**
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- 627 Plenary IV — Educating the Workforce**
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- 630 EmberCore -- Commercial Radioisotope Product for Enabling Robust Long Duration Lunar Exploration—*Christopher Morrison (USNC-Tech)*
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- 639 A Comparison of Radioisotope and Solar Array/Battery Power Systems in the Solar System—*Paul C. Schmitz (Power Computing Solutions)*
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- 654 Nuclear Electric Propulsion Modular Power Conversion Model—*Dennis Nikitaev (Analytical Mechanics Assoc.), Corey D. Smith (Analytical Mechanics Assoc.), Matthew Duchek (Analytical Mechanics Assoc.), Christopher Harnack (Analytical Mechanics Assoc.), William Machemer (Analytical Mechanics Assoc.), Emanuel Grella (Analytical Mechanics Assoc.)*
- 664 SPEAR Probe: Advanced Thermoelectric Power Generation for Nuclear Electric Space Propulsion—*Troy Howe (Howe Industries), Steve D. Howe (Howe Industries), Jack Miller (Howe Industries), Nathan Blaylock (Howe Industries), Brianna Clements (Howe Industries)*

669 Brayton Cycle Power Conversion Model for MW-Class Nuclear Electric Propulsion Mars Missions—*Christopher Harnack (Analytical Mechanics Assoc.), William Machemer (Analytical Mechanics Assoc.), Matthew Duchek (Analytical Mechanics Assoc.), Emanuel Grella (Analytical Mechanics Assoc.), Dennis Nikitaev (Analytical Mechanics Assoc.), Corey D. Smith (Analytical Mechanics Assoc.)*

677 Thermal Analysis and Systems

678 Thermal Performance of a Liquid Metal Heat Pipe with Hybrid Wick Structure—*Byung Ha Park (KAERI), Ho Sik Kim (KAERI), Chan Soo Kim (KAERI)*

685 Computational Sodium Heat Pipe Simulation for Nuclear Reactor Analysis with Nonuniform Incident Temperature—*Valerie Lawdensky (Univ. Nevada, Las Vegas), William Culbreth (Univ. Nevada, Las Vegas)*

692 Preliminary Performance Evaluation of Radiator Heat Pipe for Space Nuclear Reactor Application—*Ye Yeong Park (Ulsan Nat'l Institute of Science and Technology), Chan Soo Kim (KAERI), In Cheol Bang (Ulsan Nat'l Institute of Science and Technology)*

696 Comparison of Convective Heat Transfer Correlations and Their Application to Nuclear Thermal Propulsion Reactors—*Dennis Nikitaev (Analytical Mechanics Assoc.), Corey D. Smith (Analytical Mechanics Assoc.), Kelsa Palomares (Analytical Mechanics Assoc.)*