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ICES304: AIChE/IIC - Physio-Chemical Life Support - Waste Management Systems - Technology and Process Development

ICES-2021-91	304	<u>The Trash Compactor and Processing System Development</u>	Jorge Ramon Mesa, Gary Spexarth, John Guinn, Terrell Morrison and Jeremy Strange
ICES-2021-128	304	<u>Toilet Odor Filtration Bed Design for Extended Flight Operations</u>	Gokhan Alptekin and Andrew Hagen
ICES-2021-282	304	<u>A Comparison of Potential Trash-to-Gas Waste Processing Systems for Long-Term Crewed Spaceflight</u>	Joel Olson, David Rinderknecht, Deborah Essumang, Mirielle Kruger, Courtney Golman, Aniya Norvell and Annie Meier
ICES-2021-311	304	<u>Updated Effluent Analysis of the Heat Melt Compactor: Water Quality and Dewpoint Simulation of Gas Effluent</u>	Janine Young, Jurek Parodi, Serena Trieu, Tra-My Justine Richardson, Steven Sepka, Jeffrey Lee, Kevin Martin, Gregory Pace and Mary Lou Nadeau
ICES-2021-312	304	<u>Managing Space Food Waste with Fermentation: Novel System Design Update</u>	Maggie Coblentz, Ariel Ekblaw, Noah Feehan, Joshua Evans, Nabila Rodriguez, Diego Prado and Rasmus Munk
ICES-2021-319	304	<u>Low-Pressure Plasma Assisted Waste Conversion</u>	Kenneth Engeling, Malay Shah and Misle Tessema
ICES-2021-346	304	<u>Gas Evolution from Torrefaction Processing of Human Solid Wastes</u>	Joseph Cosgrove, Marek Wójtowicz, Michael Serio and Jeffrey Lee
ICES-2021-366	304	<u>A Review of Existing Policies Affecting the Jettison of Waste in Low Earth Orbit and Deep Space</u>	Jurek Parodi, Michael Ewert, Serena Trieu, Janine Young, Greg Pace, Kevin Martin, Tra-My Justine Richardson, Jeffrey Lee and Steven Sepka
ICES-2021-403	304	<u>NASA Universal Waste Management System and Toilet Integration Hardware Delivery and Planned Operations on ISS</u>	Melissa McKinley, Jim Fuller, Laura Shaw, Donald Carter, Melissa Borrego and James Broyan Jr
ICES-2021-418	304	<u>A Fecal Processing Technology Trade Study for Water Recovery in Various Mission Duration Scenarios</u>	Camilah Powell, Glenn Waguespack and Michael Ewert
ICES-2021-449	304	<u>Direct Contact Ultrasonic Drying Rate and Efficiency Investigation for Spacecraft Solid Waste Management</u>	Ayyoub Momen, Connor Shelander and Jonathan Bigelow
ICES-2021-460	304	<u>Water Recovery from Human Metabolic Waste: System Design, Analysis, and Preliminary Results</u>	Stephanie Boyce, Benjamin Huff, Neil Jordan, Kyle Sheets, Zachary Lofton, Kristy Stokke and Tra-My Justine Richardson

ICES305: AIChE/ASME/TECS/AIAA LS&S - Environmental and Thermal Control of Commercial and Exploration Spacecraft

ICES-2021-212	305	<u>An Environmental Control and Life Support System (ECLSS) for Deep Space and Commercial Habitats</u>	Phoebe Henson, Stephen Yates, Breydan Dotson, Ted Bonk, Barry Finger, Laura Kelsey, Christian Junaedi and Meagan Rich
ICES-2021-371	305	<u>Analysis of Crew Quarters – ECLSS Interactions for Improved Temperature Control and CO2 Mitigation</u>	Thomas Chen and Michael Ewert
ICES-2021-434	305	<u>Scaled Automated Pressure Regulation System for Analog Moon and Mars Habitat</u>	Meghan Marlowe, Ahmed Alraeesi, Gustavo Aguilar Velez, James Marlar, Arfan Wibisono, Coby Scheidemantel, Kai Staats and John Adams

ICES307: AIChE - Collaboration, Educational Outreach, and Public Engagement

ICES-2021-5	307	<u>The Portuguese GeoTech-Vision for STEAM Outreach and Education: Space for All Nations</u>	Ana Pires, José Almeida, Rui Moura, Marta Graça, Magda Cocco, Helena Mendonça, Stephen Daire, Aaron Persad, Yvette Gonzalez and Jason Reimuller
ICES-2021-249	307	<u>A Lunar Spacewalk Simulation to Support the Artemis Outreach Program and Promote Remote Public Engagement</u>	Chantil Hunt Estevez, Joshua Jones, Sujana Shrestha and Giovanni Vincenti
ICES-2021-275	307	<u>SIMOC – A hi-fidelity simulation of off-world, human habitation and bioregenerative life support as a platform for citizen scientists and virtual classrooms</u>	Kai Staats, Tyson Brown, Ezio Melotti, Pete Barnes, Gretchen Hollingsworth and Michael Pope
ICES-2021-355	307	<u>Mars University: Education to Lead the Settlement and Exploration of Mars</u>	Kolemann Lutz, Bruce Mackenzie and Raissa Camelo
ICES-2021-378	307	<u>U.S. Spacesuit Knowledge Capture – Chronicling Spacesuit Design for the Future</u>	Cinda Chullen, Vladenka Oliva, Gordon Andrews, Diana Rodgers and Robert Ibanez
ICES-2021-392	307	<u>NASA Centennial Challenges Deep Space Food Challenge Competition to Incentive Innovation in Food Systems for Long-Duration Space Exploration Missions</u>	Monsi Roman, Angela Herblet, James Broyan, Grace Douglas and Dawn Turner

ICES308: AIChE - Advanced Technologies for In-Situ Resource Utilization

ICES-2021-10	308	Moon Energy Storage and Generation: Proof of Concept	Luca Celotti, Marko Piskavec, Riccardo Nadalini, Matthias Sperl, Marc Scheper, Miranda Fateri and Aidan Cowley
ICES-2021-92	308	Performance Evaluation of Regenerative Solid Oxide Stack	Saurabh Vilekar, Christian Junaedi, Jessica Rehaag, Chunming Qi and Subir Roychoudhury
ICES-2021-103	308	Payload Concept Evaluation for Water/Oxygen production on the Moon based on Thermo- or Electro-Chemical Reduction of Lunar Regolith	Sonia Fereres, Mercedes Morales, Thorsten Denk, Karen Osen, Ryan J. McGlen, Achim Seidel, Hemanth Madakashira, Diego Urbina and David Binns
ICES-2021-107	308	Energy reduction by using direct sunlight for a microalgae photobioreactor for a Mars habitat	Johannes Martin, Gisela Detrell, Stefanos Fasoulas, Andreas Dannenberg and Reinhold Ewald
ICES-2021-127	308	Demonstration of Advanced Mars ISRU CO2 Recovery System	Gokhan Alptekin, Ambalavanan Jayaraman, Michael Bonnema, Sarah Devoss and Andrew Hagen
ICES-2021-147	308	Should Oxygen, Hydrogen, and Water on the Moon Be Provided by Earth Supply, Life Support Recycling, or Regolith Mining?	Harry Jones
ICES-2021-172	308	Laser Alumina Reduction with Heterogeneous Nucleation Toward Aluminum Smelting from Lunar Regolith	Seiya Tanaka, Naoki Tanaka, Kimiya Komurasaki and Hiroyuki Koizumi
ICES-2021-273	308	In-Situ Resource Utilization for Electrochemical Generation of Hydrogen Peroxide for Disinfection	Santosh Vijapur, Timothy Hall, E. Jennings Taylor, Rajeswaran Radhakrishnan, Dan Wang, Stephen Snyder, Brian Skinn, Carlos Cabrera and Armando Peña Duarte
ICES-2021-292	308	Experimental Proof of Concept of a Cold Trap as a Purification Step for Lunar Water Processing	Jordan Holquist, Sean Gellenbeck, Chad Bower and Philipp Tewes
ICES-2021-295	308	Demonstration of Paragon's Ionomer-membrane Water Processing (IWP) technology as a Purification Step for Lunar Water Processing	Jordan Holquist, Sean Gellenbeck, Chad Bower and Philipp Tewes

ICES400: ASME - Extravehicular Activity: Space Suits

ICES-2021-40	400	Use of a Robotic Testing Device to Investigate the Effects of Sizing on Space Suit Joints	Will Green and Pablo de Leon
ICES-2021-162	400	The Effects of Arcing Ejecta on Space Suit Materials from ISS RPCM Hot Mate/Demate During EVA	Linda Hewes, Amri Hernandez-Pellerano, Reza Abbaschian, Nicholas Derimow, Mallory Jennings, Stacie Cox, Scott West and Richard Russell
ICES-2021-241	400	Design, Manufacturing, and Test of Armor for the Exploration Space Suit	Julie Strickland, Alan Cheung, Aaron Noel, Patrick Nolan, Dan Ursenbach and Pablo Sanz-Martinez
ICES-2021-278	400	Shear Thickening Fluid Treated Space Suit Layups: Terrestrial and MISSE-9 Low-Earth Orbit Studies	Maria Katzarova, Norman Wagner, Richard Dombrowski, Miria Finckenor and Perry Gray
ICES-2021-307	400	New Methods of Manufacturing Spacesuits for Deep Space Exploration	Pablo De Leon, Stefan Tomovic and Will Green
ICES-2021-340	400	An Overview of the SmartSuit Architecture	Logan Kluis, Nathan Keller, Narahari Iyengar, Hedan Bai, Robert Shepherd and Ana Diaz-Artiles
ICES-2021-415	400	Integrative Fit Assessments for Multi-Component Stack-Up of xEMU	Kristine Davis, Richard Rhodes, Sudhakar Rajulu, Yaritza Hernandez, Elizabeth Benson, Sarah Jarvis, Garima Gupta and Han Kim
ICES-2021-416	400	Outer Boot Sole System	Thomas Stapleton, Douglas Eddy and Joseph Hamill

ICES401: ASME/AIAA LS&S - Extravehicular Activity: Systems

ICES-2021-75	401	An Augmented Reality Guidance and Operations System to Support the Artemis Program and Future EVAs	Najya Ahsan, Michael Andersen, Peter Baldwin, Jasmine Brown, Naiya Chapman-Weems, Chantil Hunt Estevez, William Hyland, Blessing Leonard, John Manlucu, Michael Vandi, Claudia Yee, Greg Walsh and Giovanni Vincenti
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ICES402: ASME - Extravehicular Activity: PLSS Systems

ICES-2021-11	402	Evaluation of Compact, Regenerable Trace Contaminant Control for Removal of Ammonia and Other Trace Constituents	Christian Junaedi, Hani Hawa and Codruta Loebick
ICES-2021-84	402	Pulse-Modulated Oxygen Pressure Control for Extravehicular Activity Space Suits	John Barker, Bryce Baker and Samuel Anderson
ICES-2021-213	402	Development of an Oxygen Heat Exchanger and Flow Meter for the Exploration Portable Life Support System	Michael Izenson, Amelia Servi, Sheldon Stokes, Theodore Beach, Tessa Rundle and David Hinckley
ICES-2021-358	402	Pressure-Swing Adsorption of Trace Contaminants Using Carbon Sorbent Monoliths	Marek A. Wójtowicz, Joseph E. Cosgrove, Michael A. Serio, Andrew E. Carlson, John M. Hostetler, Nicolas J. Espinosa and Cinda Chullen
ICES-2021-360	402	Development History of the High-Performance Infrared Laser Sensor into NASA Architectures via the Small Business Innovation Research (SBIR) Program	Cinda Chullen, Carly Meginnis, John Graf, Paul Mudgett, Mary Coan Skow and Matthew Vogel
ICES-2021-456	402	Exploration Portable Life Support System Hatch Component Implementation and Testing	Kristina Todd, John Hostetler, Nick Espinosa, Cinda Chullen and James Stein

ICES403: Extravehicular Activity: Operations

ICES-2021-86	403	Planning Road to ISS Extravehicular Activities	Jackelynne Silva-Martinez
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ICES-2021-101	403	Design and Development of an EVA Assistance Roving Vehicle for Artemis and Beyond	David Akin, Charles Hanner, Nicolas Bolatto, Daniil Gribok and Zachary Lachance
ICES-2021-113	403	Gait Patterns in an Ambulatory Virtual Reality Exploration Extravehicular Activity Simulation	Grace Wusk, Hampton Gaber and Andrew Abercromby
ICES-2021-224	403	Physical and Cognitive Exploration Simulations: Development of Exploration Tasks and Analog Environment Testing Capabilities	Omar Bekdash, Lawrence Welsh, Bridget Scheib, Jocelyn Dunn, Kyoung Jae Kim and Andrew Abercromby
ICES-2021-228	403	Stress and Coping During Simulated EVAs and Habitat Living	Gloria Leon, Travis Nelson and Pablo De Leon
ICES-2021-276	403	Helmet-Mounted Display Technology for EVA Training in NASA's Neutral Buoyancy Lab	Janine Moses, James Stoffel, Ruby Houchens, Jocelyn Dunn, Stephen Robinson and Andrew Abercromby

ICES404: ASME - International Space Station ECLS: Systems

ICES-2021-35	404	Operation of the Urine Collection and Pretreatment System in the ISS US Segment Waste & Hygiene Compartment (WHC)	Donald Carter, Darren Riggle, Stephanie Walker, Andrew Gleich, Kathryn Spicer, Petr Andreychuk, Leonid Bobe, Christopher Zahner, Michael Berrill, Alexey Kochetkov, Nicolay Rykhlov, Aleksandr Zheleznyakov and Galina Karaseva
ICES-2021-64	404	Proposed International Space Station Life Support Hardware Changes for a Lunar/Mars Surface Human Habitat – Common Cabin Air Assembly Case Study	Gregory Gentry
ICES-2021-83	404	Upgrades to the International Space Station Urine Processor Assembly	Jill Williamson, Donald Carter, James Hill and Arthur Brown
ICES-2021-138	404	Lessons Learned in Space Life Support System Testing	Harry Jones

ICES405: ASME - Human/Robotics System Integration

ICES-2021-227	405	Lunar instrument data integration into the Virtual Reality Mission Simulation System for Decision Communication and Situational Awareness	Cody Paige, Don Derek Haddad, Ferrous Ward, Trent Piercy, Jennifer Heldmann, Darlene Lim, Anthony Colaprete, Amanda Cook, Richard Elphic and Dava Newman
ICES-2021-257	405	A Virtual Reality Mission Simulation System (vMSS) Supporting Closed-Loop Mission Control	Ferrous Ward, Trent Piercy, Jennifer Heldmann, Darlene Lim, Anthony Colaprete, Amanda Cook and Dava Newman
ICES-2021-405	405	Characterizing a Biometric Sensor Suite as an Approach for Astronaut Performance Model Validation	Christine Fanchiang, Kimia Seyedmadani, Michael Zero, Mark Shelhamer and David Klaus

ICES500: AIAA LS&S/AICHe - Life Science/Life Support Research Technologies

ICES-2021-142	500	The Partial Gravity of the Moon and Mars Appears Insufficient to Maintain Human Health	Harry Jones
ICES-2021-185	500	Microalgae-based Hybrid Life Support System from Simulations to Flight Experiment	Gisela Detrell
ICES-2021-229	500	Sustained Veggie: A Continuous Food Production Comparison	Aaron Curry, Jess Buncheck and Matthew Romeyn
ICES-2021-268	500	Production, Nutritional and Organoleptic Analysis of Solanaceous Crops for Space	Lashelle Spencer, Takiyah Sirmans, Matthew Romeyn and Raymond Wheeler
ICES-2021-289	500	Design of a Plant Health Monitoring System for Enhancing Food Safety of Space Crop Production Systems	Oscar Monje, Matthew Nugent, Joshua Finn, Lashelle Spencer, Moon Kim, Jianwei Qin, Aubrie Orouke, Matthew Romeyn and Ralph Fritsche

ICES501: AIAA LS&S - Life Support Systems Engineering and Analysis

ICES-2021-47	501	Assessment of Biocide Impacts on Life Support and Extravehicular Activity Architectures	Morgan Abney, Kevin McCarley, Colin Campbell, Michael Callahan, Spencer Williams, Daniel Gazda, Eliza Montgomery, Lance Delzeit and Martin Feather
ICES-2021-137	501	Using the System Complexity Metric (SCM) to Compare CO2 Removal Systems	Harry Jones
ICES-2021-193	501	Logistics Modeling and Simulation for Lunar and Mars Mission Architecture Analysis	Hiroyuki Miyajima
ICES-2021-365	501	Developing a Daily Metabolic Rate Profile for Human Exploration Missions	Michael Ewert, Meghan Downs and John Keener

ICES502: AIAA LS&S - Space Architecture

ICES-2021-21	502	Optimization of a Lunar Airlock	François Lévy and Georgi Petrov
ICES-2021-23	502	Habitats for Our Future Extraterrestrial Homes – Lessons from Terrestrial Analogues and Our First Habitats in Space	Sandra Häuplik-Meusburger and Sheryl Bishop
ICES-2021-41	502	HAVEN Lunar Port and Base – Design of a Lunar Arrival Port with a Long-Term Habitat for Versatile Crew Occupations	Sabrina Kerber, Sandra Häuplik-Meusburger and Bernard Foing
ICES-2021-78	502	Senses as Drivers for Space Habitats Design in Microgravity	Monika Brandić Lipińska, Layla van Ellen and Volker Damann

ICES-2021-96	502	Project Olympus: Off-World Additive Construction for Lunar Surface Infrastructure	Melodie Yashar, Jason Ballard, Evan Jensen, Michael Morris, Rebecca Pailles-Friedman, Waleed Elshanshoury, Mahsa Esfandabadi, Vittorio Netti, Albert Rajkumar, David Gomez and Alexander Guzeev
ICES-2021-97	502	Experimental Investigation of Minimum Required Cabin Sizing in Varying Gravity Levels	David Akin, Zachary Lachance and Charles Hanner
ICES-2021-130	502	Space Food System Water Content: Considerations for ECLSS Water System Closure	Grace Douglas, James Broyan and Meredith Johnson
ICES-2021-151	502	PIUME: In space as on earth, on earth as in space	Gabriele Cecchini, Cesare Lobascio and Pau Vidal-Peiró
ICES-2021-157	502	Medical Bay Design Considerations for the Moon and Mars Base Analog (MaMBA)	Kazuhiko Momose and Christiane Heinicke
ICES-2021-203	502	Lessons from the first simulations at the Moon and Mars Base Analog (MaMBA)	Christiane Heinicke, Johannes Schöning and Marc Avila
ICES-2021-225	502	Nūwa, a self-sustainable city state on Mars – Development concept, Urban design and life support	Gisela Detrell, Alfredo Muñoz, Miquel Banchs-Piqué, Guillem Anglada-Escudé, Philipp Hartlieb and Miquel Sureda Anfrés
ICES-2021-288	502	Solar Arrays with Variable Panel Elevations for the Moon Village	Eric Halbach, Daniel Inocente, Neil Katz and Georgi I. Petrov
ICES-2021-318	502	A Strategic Pathway to the Artificial Gravity Testbed Element in Low Earth Orbit	Albert Rajkumar and Kriss Kennedy
ICES-2021-344	502	Astronaut-in-the-Loop: An Iterative Design Research Framework for Space Environments	Sanjana Sharma, Sands Fish and Ariel Ekblaw
ICES-2021-351	502	Mars Manufacturing Settlement	Bruce Mackenzie, Kolemman Lutz, Georgi Petrov, Bart Leahy and Stuart Feldman
ICES-2021-394	502	HiveMars: Design of a Hybrid-class, scalable Settlement on the martian surface	Mirha Vlahovljak, Isabella Paradiso, Vittorio Netti, Federica Buono, Giuseppe Fallacara, Alessandro Angione, Hana Zečević and Ivana Fuscello
ICES-2021-398	502	Design of an Autonomously Deployable Mars Habitat	Rudolf Walther Erdem Neumerkel, Miruna Vecerdi and Sandra Häuplik-Meusburger
ICES-2021-400	502	Preliminary Mass Validation of Adapting Payload Fairing Geometries as Pressurized Modules for Various LEO Applications	Leonardo Guzman
ICES-2021-404	502	Food Production Module Systems for Extraterrestrial Planetary Surfaces	Mahsa Moghimi Esfandabadi and Olga Bannova

ICES503: AIAA LS&S - Radiation Issues for Space Flight

ICES-2021-121	503	Development of an Active Shielding Concept Using Electrostatic Fields	Stojan Madzunkov, Dragan Nikolic, Anton Belousov, Dan Fry, Janet Barzilla, Amir Bahadori, Rajarshi P. Chowdhury, Luke Stegeman and Mathew Lund
ICES-2021-320	503	Radiocatalyst for Microbial Control and Radiation Protection	Michael Flynn, Rocco Mancinaelli, Jorden Garland and Samuel Solomon

ICES506: AIAA LS&S - Human Exploration Beyond Low Earth Orbit: Missions and Technologies

ICES-2021-20	506	International Space Station as a Testbed for Exploration Environmental Control and Life Support Systems – 2021 Status	Laura Shaw, John Garr, Lynda Gavin, David Hornyak, Christopher Matty, Alesha Ridley, Michael Salopek and Katherine Toon
ICES-2021-186	506	A Guideline for a Sustainable Lunar Base Design for Constructed in Lunar Lava Tubes and Their Vertical Skylights	Masato Sakurai, Asuka Shima, Isao Kawano, Junichi Haruyama and Hiroyuki Miyajima
ICES-2021-205	506	Fortuna: A Human and Robotic Exploration Mission to Venus	Drashti Shah, Fabian Westhaeusser, Efstratios Rigas, Flavie Rometsch, Ian Luca Benecken, Mark Fellner, Alice Pais de Castro, Zorana Štaka, Clemens Felix Kaiser, Marianne Amorosi, Hlib Cheporniuk, Jack Hooper, Ahmed Baraka and Partick Pischulti
ICES-2021-215	506	Self-Assembling and Self-Regulating Space Stations: Mission Concepts for Modular, Autonomous Habitats	Ariel Ekblaw, Joe Paradiso, David Zuniga and Keith Crooker
ICES-2021-298	506	Using Systems Engineering to Develop an Integrated Crew Health and Performance System to Mitigate Risk for Human Exploration Missions	Kerry McGuire, Benjamin Easter, Jennifer Mindock, Andrea Hanson, Melinda Hailey, Leticia Vega, Erik Antonsen and Kris Lehnhardt
ICES-2021-384	506	NASA Environmental Control and Life Support Technology Development for Exploration: 2020 to 2021 Overview	James Broyan, Robyn Gatens, Walter Schneider, Laura Shaw, Melissa McKinley, Michael Ewert, Marit Meyer, Gary Ruff, Andrew Owens and Catlin Meyer
ICES-2021-454	506	Incorporation of Planetary Protection Knowledge Gaps into Agency Capability Development Planning	J Andy Spry, Bette Siegel, Lisa Pratt and Gerhard Kminek

ICES509: AIAA LS&S - Fire Safety in Spacecraft and Enclosed Habitats

ICES-2021-15	509	The effect of reduced pressure on the characteristics of spreading flames	Luca Carmignani, Maria Thomsen, Sonia Fereres, Michael Gollner, Carlos Fernandez-Pello, David Urban and Gary Ruff
ICES-2021-102	509	Determining the Cause of Reduced Concurrent Flame Spread over Thin Solid Fuels in Low Pressure and Low Gravity	Maria Thomsen, Sonia Fereres, Luca Carmignani, Carlos Fernandez-Pello, Gary A. Ruff and David L. Urban

ICES-2021-218	509	Opposed flame spreading along a structured PMMA sample in exploration atmosphere under microgravity	Christian Eigenbrod, Florian Meyer, Grunde Jomaas, Sandra Olson, Paul Ferkul, David Urban, Gary A. Ruff and Balazs Toth
ICES-2021-244	509	Evaluation of Combustion Products from Large-Scale Spacecraft Fires during the Saffire-IV and Saffire-V Experiments	Claire Fortenberry, Michael Casteel, John Graf, John Easton, Justin Niehaus, Marit Meyer, David Urban and Gary Ruff
ICES-2021-266	509	Fire Safety Implications of Preliminary Results from Saffire IV and V Experiments on Large Scale Spacecraft Fires	David Urban, Gary Ruff, Paul Ferkul, John Easton, Jay Owens, Sandra Olson, Marit Meyer, Claire Fortenberry, John Brooker, John Graf, Michael Casteel, Grunde Jomaas, Balazs Toth, Christian Eigenbrod, James T'len, Ya-Ting Liao, Carlos Fernandez-Pello, Florian Meyer, Guillaume Legros, Augustin Guibaud, Nikolay Smirnov and Osamu Fujita
ICES-2021-271	509	Modeling the Uptake of Hydrogen Chloride onto Interior Spacecraft Materials	Justin Niehaus, Sandip Mazumder, Suleyman Gokoglu, Gordon Berger and John Easton
ICES-2021-290	509	Battery Fire Risk Assessment	Rosa Padilla, Daniel Dietrich, William Pitz, Gary Ruff and David Urban

ICES510: AIAA LS&S - Planetary and Spacecraft Dust Properties and Mitigation Technologies

ICES-2021-90	510	HEPA Filter Testing for Life Support Systems on Artemis Lunar Missions	Andrew Walcker, Ryan Kobrick, Katie Neuman, R.J. Surdyk and Juan Agui
ICES-2021-149	510	Modeling the Dust Particle Impact Rate on the MOXIE Filter	Gavin Kohn, Michael Hecht, Jeffrey Hoffman and John McClean
ICES-2021-304	510	Aerosol Physics for the Lunar Environment: Equations for Lunar Dust Control and Mitigation Technologies	Nima Afshar-Mohajer and Marit Meyer
ICES-2021-309	510	Particle Loading Tests on HEPA Flat Sheet Media at Sub-Ambient Pressures Using a Lunar Dust Simulant	Juan Agui, Robert Green, Gordon Berger, Matthew Johnson and Gary Brown
ICES-2021-314	510	Inertial Centrifugal-Based Pre-filter for Spacecraft Life Support Systems on Lunar Missions	Juan Agui, Jason Burns and Robert Green
ICES-2021-433	510	A Ground Testing Program to Verify Lunar Dust-Tolerant Hardware for the Artemis Mission	Marit Meyer and Benjamin Sumlin

ICES511: AIAA LS&S - Reliability for Space Based Systems

ICES-2021-140	511	Going Beyond Reliability to Robustness and Resilience in Space Life Support Systems	Harry Jones
ICES-2021-199	511	Analysis and Optimization of Test Plans for Advanced Exploration Systems Reliability and Supportability	Andrew Owens, William Cirillo, Nicole Piontek, Chel Stromgren and Jason Cho
ICES-2021-341	511	Process Capability Analysis of Surface Mounted Components Requiring 100% X-Ray Inspection in Accordance with IPC-J-STD-001 GS Space Addendum	Todd Treichel
ICES-2021-370	511	More Data Needed for Failure Rate Estimation, Validation, and Uncertainty Reduction	Andrew Owens, William Cirillo, Nicole Piontek, Chel Stromgren and Jason Cho

ICES513: AIAA LS&S - Computational Modeling for Human Health and Performance Analysis

ICES-2021-89	513	Development of an Advanced Clothing Model that Considers Heat and Moisture Transport	Mark Hepokoski, Timofey Golubev, Scott Peck, Shailesh Gupta, Kevin Ward, Joel Coffel and Michael Ewert
ICES-2021-237	513	Modeling Crew Performance Degradation Due To Radiation Exposure In Space	Mc Dorbecker and James Nabity
ICES-2021-325	513	Investigation of Spaceflight Associated Neuro-Ocular Syndrome Asymmetry through Asymmetric Cranial Venous Modeling	Michael Van Akin, Jay Buckey, Danielle Carroll and Allison Anderson
ICES-2021-396	513	Simulated cardiovascular responses in microgravity and head-down tilt	Mimi Lan, Veronique Archambault-Leger, Scott Phillips, Jay Buckey and Ryan Halter