

PAPER REFERENCE LIST FOR ICES 2016 - VIENNA

Paper #	Session	Paper Title	Authors
ICES_2016_ (#)			
1	101	Robust Thermal Control of Propulsion Lines for Space Missions	Pradeep Bhandari
18	101	Thermal Control of Mars Sample in Orbit & During Ascent from Mars	Pradeep Bhandari, Matthew Redmond and Jason Kempenaar
20	101	HESAS, a flexible and stand-alone LHP thermal bus	Olivier Berder, Stéphane Van Oost, Rolf Kluge and Monika Kaercher
56	101	MLI Blanket Effective Emittance Variance and its Effect on Spacecraft Propellant Line Thermal Control	Jennifer Miller, Keith Novak, Pradeep Bhandari and Jacqueline Lyra
62	101	Low CTE Heat Pipe – Mounting of Aluminium Heat Pipes on CFRP face sheets	Monika Kaercher and Rolf Kluge
69	101	30 Years of Thermally Controlled Imaging Spectrometers for Earth and Planetary Science	Robert Green
199	101	In-orbit thermal control system performance results from LISA Pathfinder LEOP and Thermal Commissioning	Nicholas Fishwick, Neil Dunbar, Bengt Johlander and James Etchells
355	101	Thermal design of the ESA Solar Orbiter instrument PHI	Isabel Perez-Grande, Ignacio Torralbo, Gustavo Alonso, Alejandro Gomez San Juan and German Fernandez Rico
70	102	Thermal Response of the Mars Science Laboratory Spacecraft during Entry, Descent and Landing	Keith Novak, Anthony Paris, Frank Kelly and Jennifer Miller
120	102	Development of Passive Thermal Control for Mars Surface Missions	Stefan Herndler, Christian Ranzenberger and Stéphane Lapensée
311	102	MSL Rear Hazcam Thermal Characterization	Juan Cepeda-Rizo, Gordon Cucullu and Patrick Wu
402	102	Evaluation of Modelling Techniques for a Carbon Dioxide Gas-Gap for the ExoMars Rover and Surface Platform Mission	Luke Tamkin, Edward Nelson and Hannah McQuail
90	103	Functional Interface Considerations within an Exploration Life Support System Architecture	Jay Perry, Miriam Sargusingh and Nikzad Toomarian
228	103	Performance of a Nafion Water Vapor Exchanger in an Amine Bed Test Loop	Michael Izenson, Danny Micka, Gregory Quinn and William Papale
231	103	Design, Development, and Testing of a Water Vapor Exchanger for Spacecraft Life Support Systems	Michael Izenson, Danny Micka, Ariane Chepko, Kyle Rule and Molly Anderson
434	103	Resource Tracking Model Updates and Trade Studies	Joe Chambliss, Imelda Stambaugh and Michael Moore
51	104	Hybrid Heat Pipes for Lunar and Martian Surface and High Heat Flux Space Applications	Mohammed Ababneh, Calin Tarau, William Anderson, Jeffery Farmer and Angel Alvarez-Hernandez
55	104	Thermophysical behaviour of diamond composites for diode laser heat sink applications at temperatures between 4K and ambient	Christian Edtmaier, Ernst Bauer, Jakob Segl, Annette Foelske-Schmitz and Laurent Pambaguian
118	104	Semi-Automated Bonding of OSR – Qualification of a novel Process	Martin Moser, Christian Ranzenberger and Sophie Duzellier
121	104	Alternative Grounding Method for MLI Blankets	Wiktor Gabryel, Christian Ranzenberger, Walter Hoidn and Johannes Wolf
210	104	Evaluation of Thermal Control Mirror with Tunable Thermo-optical Properties for Radiowave Transmissive Multilayer Insulation	Kota Tomioka, Taisei Honjo, Sumitaka Tachikawa, Kousuke Kawahara and Yuji Nagasaka
230	104	Micro-Channel Thermal Control System Development	Benjamin Slote, Renee Noble, Edward Salley and Michael Kimble
238	104	Development of 3D MLI under ESA contract in frame of the Task Force II for Polish industry	Agata Białek, Paweł Paśko, Roman Wawrzaszek, Konrad Rutkowski, Kamil Grassmann, Alan Budzyński, Piotr Osica and Karol Seweryn
359	104	Water Phase Change Heat Exchanger System Level Analysis for Low Lunar Orbit	Eugene Ungar, Moses Navarro, Scott Hansen and Rubik Sheth
388	104	Internal Cryogenic Insulation for LH2 Tanks of Future Launchers	Wolfgang P.P. Fischer, Ugis Cabulis, Vladimir Yakushin and Antje Laabs

400	104	Flexible Self-Regulating Heater (FSRH) using PTC Effect: a Promising Technology for Future Spacecraft Thermal Control	Jean-Paul Dudon, Celine Zaradzki, Philippe Paul-Bert and Philippe Poinas
403	104	Invention of a Constant Temperature Heat Sink/Source based on Thermochemical Principles (SORTECA)	Mathias Gralher
436	104	Development of an Engineering Model of a monophasic Electro Hydro Dynamic (EHD) pumped fluid loop within the frame of the NEOSAT pre-development activities	Robert Thorslund, Are Bjorneklett, Mikael Antelius, Tisna Tjiptahardja, Thomas Huens, Arnaud Scommegna and Andy Walker
6	105	Assessment of Thermal Balance Test Criteria Requirements for Test Objectives and Thermal Design	John Welch
35	105	Application of GEVS to Risk Tolerant Missions	Eric Grob
250	105	Methodology, Findings and Lessons Learnt of the ASSET+ Study	Piero Messidoro, Andrea Ferrero, Mauro Pasquinelli, Lorenzo Pace, Patrick Hugonnot, Francois Verges, Reiner Werner and Benoit Laine
114	106	Launcher Plume effect on the Satellite	Aydin Cataloglu and Karlheinz Eckert
119	106	Versatile Thermal Insulation for Cryogenic Upper Stages	Martin Moser, Walter Hoidn, Adam Tvaruzka, Matteo Loche, Ugo Lafont and Philippe Delouard
116	107	Verification of Rapid Thermal Design Approach using Design and Flight Data of Hodyoshi-1 Microsatellite	Tsuyoshi Totani, Hiroto Ogawa, Yusuke Kuramoto, Naoki Miyashita, Masashi Wakita and Harunori Nagata
186	107	Comparison of Thermal Design of Horyu-Series and Results of Thermal Vacuum Testing	Hirokazu Masui, Trinh Thang Long, Takashi Yamasaki and Mengu Cho
192	107	Thermal Design of a Multi Mission Micro-Entry Capsule	Sean Tuttle and Simon Barraclough
223	107	Thermal control of the radiation detector for the micro-satellite with high-thermal-conductive graphite sheets	Daeil Park, Kikuko Miyata, Kazutaka Yamaoka, Keisuke Tamura and Hosei Nagano
257	107	Thermal Analysis of the Iodine Satellite for Critical Design Review	Stephanie Mauro
407	107	Development of a two-phase heat strap for CubeSat applications	Steven Isaacs, Diego Arias, Mike Hulse, Derek Hengeveld and Peter Hamlington
8	108	Performance of multi-layer insulation for spacecraft instruments at cryogenic temperatures	Colin Smith, Ian Mckinley, Perry Ramsey and Jose Rodriguez
64	108	Correlation of Rarified Gas Heat Transfer for Acceleration of Thermal Transitions during JWST Thermal Vacuum Testing	Russell Schweickart, Randy Franck and Sang Park
82	108	Efficient Space Background Simulator Design for JWST Testing	Pamela Brinckerhoff
141	108	High Performance Cryogenic Radiators for James Webb Space Telescope	Randy Franck, Anthony Gurule, Drew Brown, Pamela Brinckerhoff, Thomas McCallan and Mike Renbarger
305	108	SPICA cryogenic infrared telescope thermal design	Hiroyuki Ogawa, Keisuke Shinozaki and Takao Nakagawa
330	108	Successful Completion of the JWST OGSE2 Cryogenic Test at JSC Chamber-A while Managing Numerous Challenges	Sang Park, Pamela Brinckerhoff, Bill Burt, Randy Franck, Wes Ousley, Rusty Schweickart and Shaun Thomson
396	108	James Webb Space Telescope Integrated Science Instrument Module Thermal Vacuum/Thermal Balance Test Campaign at NASA's Goddard Space Flight Center	Stuart Glazer and Brian Comber
429	108	James Webb Space Telescope Thermal Pathfinder Test Development	Angelique Davis, Wes Ousley, William Burt and Christine Cottingham
4	201	Transient modelling of pumped two-phase cooling systems: Comparison between experiment and simulation	Henk Jan van Gerner and Niels Braaksma
21	201	Heat transfer in finned evaporator channels of two-phase thermal control system for microgravity conditions	Julien Hugon, Anthony Delmas, Pavlo Gakal, Gennadiy Gorbenko, Rustem Turna and Dmytro Chayka
24	201	Loop Heat Pipe Startup Behaviors	Jentung Ku
25	201	Thermal Vacuum Testing of a Helium Loop Heat Pipe for Large Area Cryocooling	Jentung Ku and Franklin Robinson

129	201	A Two-Phase Mechanically Pumped Fluid Loop for Thermal Control of Deep Space Science Missions	Eric Sunada, Pradeep Bhandari, Brian Carroll, Terry Hendricks, Benjamin Furst, Joshua Kempenaar, Gajanana Birur, Hiroki Nagai, Takurou Daimaru, Kenichi Sakamoto, Stefano Cappucci and Jordan Mizerak
185	201	Comparison between Numerical Simulation and On-orbit Experiment of Oscillating Heat Pipes	Takurou Daimaru, Shuhei Yoshida, Hiroki Nagai, Kosuke Tanaka, Makiko Ando, Atsushi Okamoto and Hiroyuki Sugita
196	201	Component development in Europe for Mechanically Pumped Loop Systems (MPLs) for cooling applications in space	Roel Benthem, Johannes van Es, Henk Jan van Gerner, Stephane Lapensee and David Schwaller
219	201	Vapor Chamber with Phase Change Material-Based Wick	James Yun, Calin Tarau and Nathan Van Velson
253	201	ExoMars Rover and Surface Platform Mission: LHPs Acceptance and Qualification Campaign	Manuela Muni, Federica Negri, Andrea Ferrero, Paula Prado Montes and Coralie Alary
268	201	Thermal Control System for Low Noise Amplifiers based on Loop Heat Pipes	Paula Prado Montes, Donatas Mishkinis, Javier Corrochano, Alejandro Torres and Stéphane Lapensée
279	201	High thermal conductive carbon fiber radiators with controlled Loop Heat Pipes	Konstantin Goncharov, Yury Panin, Maxim Balykin and Anatoly Khmel'nitsky
288	201	Development of a Pumped Two-phase System for Spacecraft Thermal Control	Michael Ellis and Richard Kurwitz
336	201	Thermal Behavior of Axial Groove Heat Pipe with Radiator under Gravity: Dependence of tilt angles	Yasuko Shibano and Hiroyuki Ogawa
408	201	Graphene Loop Heat Pipe testing	Marco Molina
435	201	Charging Considerations for Loop Heat Pipes	Brian D'Entremont and Jay Ochterbeck
441	201	Gravity-Invariant Condition of Water Sublimator Characteristic Parameter Design: Analysis and Experiment	Yuying Wang, Jindong Li, Xianwen Ning, Jianyin Miao and Zhong Qi
33	202	Thermal Stability Testing of Two-Phase Thermal Control Hardware for the Surface Water Ocean Topography Mission	Ruwan Somawardhana
130	202	„Full Metal Blanket“, a 100% metallic high temperature thermal protection for the Solar Orbiter High Gain Antenna Major Assembly at 0.28 AU from the Sun	Raphaël Naire, Irene Ibargoyen Bianchi and Claudio Damasio
153	202	CHEOPS Platform Thermal Architecture	Ignacio Melendo and Romain Peyrou-Lauga
154	202	ICI Thermal Control	José Luis García, Jesualdo Ros and Ignacio Melendo
155	202	Ice Cloud Imager On Board Calibration Target Thermal Control	José Luis García, Marc Bergadá, Richard Wylde, Monika Lofthouse, Jesualdo Ros and Ignacio Melendo
157	202	JAXA's X-ray Astronomy Mission ASTRO-H: Launch and First Month's In-Orbit Thermal Performance	Naoko Iwata, Takashi Usui, Akihiko Miki, Mizuho Ikeda, Yoh Takei, Atsushi Okamoto, Hiroyuki Ogawa and Tadayuki Takahashi
195	202	Thermal Performance of the "MERS" Recoverable Micro Satellite in Orbit	Simon Barraclough and Sean Tuttle
212	202	The Challenges of the Thermal Design of BepiColombo Mercury Planetary Orbiter	Andrea Ferrero, Domenico Battaglia, Tiziano Malosti, Juergen Schilke and Daniele Stramaccioni
36	203	NOAA Weather Satellite Thermal Vacuum Test Analysis	Eric Grob
37	203	Thermal Model Correlation of a NOAA Weather Satellite	Eric Grob
78	203	Arc Heating Wind Tunnel Facility in ISAS/Japan and the activity to update and improve it for Further Sample Return Missions	Takayuki Shimoda and Kazuhiko Yamada
193	203	First Results of Testing the Re-entry Thermal Design of the "MERS" Recoverable Micro Satellite	Sean Tuttle, Simon Barraclough, Bianca Szasz, Kei-Ichi Okuyama and Takayuki Shimoda
211	203	The Thermal Balance/Thermal Vacuum Test of BepiColombo Mercury Planetary Orbiter	Juergen Schilke, Andrea Ferrero, Domenico Battaglia, Tiziano Malosti and Daniele Stramaccioni
236	203	Thermal Test Campaign of the Solar Orbiter STM	Claudio Damasio, Alex Jacobs, Scott Morgan, Mike Sprague, Daniel Wild and Victoria Luengo

246	203	Thermal Balance Test of the STIX DEM for ESA Solar Orbiter Mission	Piotr Osica, Agata Białek, Karol Seweryn, Kamil Grassmann, Sam Krucker, Piotr Orleański, Konrad R. Skup and Gianluigi Capo
248	203	PFM Thermal balance-thermal cycling test of the ExoMars Entry Descent and Landing Demonstrator Module	Marco Gottero, Valter Perotto, Coralie Alary and Stephane Lapensee
364	203	Thermal Testing of the Sentinel 5 Precursor TROPOMI earth observation instrument	Paul Zevenbergen
394	203	STAMP: data acquisition system for large-scale thermal tests	Johannes Guijt, Alize Pistidda and Pierre-Arnaud Ansel
409	203	Integration of STAMP thermal testing software with spacecraft checkout (EGSE) systems	Alize Pistidda, Pierre-Arnaud Ansel and Johannes Guijt
57	204	Results of the Alternative Water Processor Test, A Novel Technology for Exploration Wastewater Remediation	Leticia Vega, Caitlin Meyer, Sarah Shull, Stuart Pensinger, William Jackson, Dylan Christenson, Niklas Adam and Kevin Lange
147	204	Feasibility of Photobioreactor Systems for use in Multifunctional Environmental Control and Life Support System for Spacecraft and Habitat Environments	Emily Matula and James Nabity
173	204	Growing Plants from SEEDS on Mars for Supporting Human Exploration	Marco Volponi, Jacopo Pisacreta and Cesare Lobascio
198	204	The preliminary design of the EDEN ISS Mobile Test Facility - An Antarctic greenhouse	Paul Zabel, Matthew Bamsey, Conrad Zeidler, Vincent Vrakking, Daniel Schubert, Oliver Romberg, Giorgio Boscheri and Tom Dueck
201	204	Early Trade-offs and Top-Level Requirement Definition for Antarctic Greenhouses	Matthew Bamsey, Paul Zabel, Conrad Zeidler, Vincent Vrakking, Daniel Schubert, Eberhard Kohlberg, Michael Stasiak and Thomas Graham
203	204	Functionality and setup of the algae based ISS experiment PBR@LSR	Jens Bretschneider, Norbert Henn, Stefan Belz, Gisela Detrell, Jochen Keppler, Stefanos Fasoulas, Peter Kern and Harald Helisch
206	204	CHOOSING CROPS FOR CULTIVATION IN SPACE	Tom Dueck, Frank Kempkes, Meinen Esther and Stanghellini Cecilia
229	204	Hollow Fiber Membrane Bioreactor Systems for Wastewater Processing: Effects of Environmental Stresses Including Dormancy Cycling and Antibiotic Dosing	Janelle Coutts, Mary Hummerick, Griffin M. Lunn, Brian Larson, Lashelle Spencer, Michael Kosiba, Christina Khodadad and John Catechis
351	204	The EDEN ISS Rack-Like Plant Growth Facility	Giorgio Boscheri, Cesare Lobascio, Matteo Maria Lamantea, Ilaria Locantore, Vincenzo Guarnieri and Daniel Schubert
352	204	The MELISSA GreenMOSS Preliminary Design Study: a Greenhouse Module on the Lunar Surface	Giorgio Boscheri, Cesare Lobascio, Matteo Maria Lamantea and Christel Paille
353	204	Space environmental tolerance of a terrestrial cyanobacterium, Nostoc sp. HK-01	Shunta Kimura, Kaori Tomita-Yokotani, Kotomi Inoue, Seigo Sato, Mayumi Arai and Hiroshi Katoh
354	204	Evaluation of selected materials, as food for space environment	Kaori Tomita-Yokotani, Yasuko Kimura, Shunta Kimura, Seigo Sato, Hiroshi Katoh and Mayumi Arai
366	204	Bioreactors and biomaterials in space architecture	Agata Kolodziejczyk and Leopold Summerer
383	204	Utilization of the terrestrial cyanobacteria -Practical development of the cyanobacteria sheet-	Hiroshi Katoh, Mika Yokoshima, Shunta Kimura, Jun Furukawa, Kaori Tomita-Yokotani, Yuji Yamaguchi, Hiroyuki Takenaka and Nobuyuki Kohno
430	204	Non-Thermal Fresh Food Sanitation by Atmospheric Pressure Plasma	Ross Remiker, R. J. Surdyk and Robert Morrow
128	205	AERO SEKUR EXPERIENCE IN ADVANCED LIFE SUPPORT TECHNOLOGY	Luciano Battocchio, Marco Adami and Giuseppe Bonzano
152	205	Capacitive Biosensing Technique for the Detection of DNA Modification and Hybridization Process Using Tailored Interdigital Microelectrode Arrays	Nadja E Solis-Marcano, Marjorie Lopez-Nieves, Brismar Pinto-Pacheco and Carlos R. Cabrera
235	205	Experimental Analysis of Multi-trace Gas Analyzer based on Photoacoustic Spectroscopy for Manned Spacecraft	Hanqing Zhao, Xiantao Yang, Gui Meng, Hongzhu Xi, Tao Yu, Jianfa Zhou, Yongqing Peng and Jiangbo Zou

283	205	Compact Multi-Channel Infrared Laser Absorption Spectrometer for Spacecraft Fire Safety Monitoring	Ryan Briggs, Mathieu Fradet, Clifford Frez, Siamak Forouhar and Randy May
284	205	Progress Report on the Spacecraft Atmosphere Monitor	Stojan Madzunkov, Byunghoon Bae, Jurij Simcic, Wade Rellergert, John Gill, Rembrandt Schaefer, Evan L. Neidholdt, Dragan Nikolic, Richard Kidd and Murray Darrach
285	205	Mapping of Spacecraft Atmosphere Monitor Signal to Major Constituent Abundances	Dragan Nikolic and Stojan Madzunkov
316	205	Elaborated Odor Test for Extended Exposure	Vanessa Buchanan, Emily Henry and Susana Harper
448	205	ANITA2 on its way now to ISS - Latest results and developments of the multicomponent ISS Air Analyser	Timo Stuffer, Peter Hofmann and Atle Honne
125	206	Columbus Ka-band Terminal thermal control - a compact design for varying conditions	Pier Luigi Ganga, Valfredo Zolesi, Fabio Lorenzini and Jan Persson
251	206	WPA Mk I: On orbit and on ground investigations and refurbishment activities	Gaetana Bufano, Gianni Truscelli, Antonietta Itta, Renato Bianchi, Jan Persson and Stephan Hinderer
411	206	COLUMBUS Coolant Fluid Servicer – CCFS – Development and Implementation	Zoltan Szigetvari, Stephan Hinderer and Gaetana Bufano
9	207	Considerations for Thermal Modeling of Lithium-Ion Cells for Battery Analysis	Steven Rickman, Robert Christie, Ralph White, Bruce Drolen and Moses Navarro
34	207	Preparation for Cassini Grand Finale – Validation of Saturn Ring Heating in TSS	Kirsten Swanson and Frank Leader
54	207	Advances in automatic thermal model to test correlation in space industry	Jan Klement, Eva Anglada and Inaki Garmendia
132	207	TMRT (Thermal Model Reduction Tool): Presentation of the tool and application on satellite model reduction for launcher coupled analysis	Patrick Hugonnot, Thierry Basset, Patrick Connil, François Brunetti and Michèle Ferrier
188	207	Addressing Thermal Model Run Time Concerns of the Wide Field Infrared Survey Telescope using Astrophysics Focused Telescope Assets (WFIRST-AFTA)	Hume Peabody, Sergio Guerrero, John Hawk, Juan Rodriguez-Ruiz, Carson McDonald and Cliff Jackson
209	207	ESATAN-TMS Thermal Convergence for Strongly Coupled Problems	Christian Wendt and Henri Brouquet
249	207	Mercury Albedo Retro-Reflection: Modelling and Effects on BepiColombo MPO Solar Array	Anja Frey, Giulio Tonello and Daniele Stramaccioni
303	207	Development, Benchmarking and Validation of an Automated Thermal Model Correlation Tool	Benjamin Frey, Niklas Bohne and Marco Bruno
342	207	Verifying Thermal Models Against Thermal Designs Using the COVER Software	Hume Peabody and Sharon Peabody
410	207	A Standard for the Exchange of Thermal Analysis Data (STEP-TAS)	James Etchells
92	300	Predictive Modeling of the CDRA 4BMS	Robert Coker and James Knox
170	300	Assessment of the Impacts of ACLS on the ISS Life Support System using Dynamic Simulations in V-HAB	Daniel Pütz, Claas Olthoff, Michael Ewert and Molly Anderson
191	300	Automatic Determination of Multiple Malfunction Repair Order on Complex Life Support System	Masakatsu Nakane, Yoshio Ishikawa and Hiroyuki Miyajima
258	300	CFD Modeling of Oxygen Generation System Operation Effect on the Rack Air Composition	Chang Son, Nikolay Ivanov, Evgueni Smirnov and Denis Telnov
293	300	Experimental Validation of Vacuum Desorption in 1-D Model of CO2 Removal	Karen N. Son, Carlos Gomez, Matthew Paragon and James Knox
26	302	Integrated CO2 Removal and Compression System Performance	Tra-My Justine Richardson, Darrell Jan, John Hogan, Roger Huang, Jason Samson, Gary Palmer and James Knox
27	302	Performance of Silica Gel in the role of Residual Air Drying, Part II	Tra-My Justine Richardson, Darrell Jan, John Hogan, Roger Huang, Gary Palmer and James Knox

46	302	Development of Carbon Dioxide Removal Systems for Advanced Exploration Systems 2015-2016	James Knox, Robert Coker, David Howard, Warren Peters, David Watson, Gregory Cmarik and Lee Miller
47	302	Long Duration Sorbent Testbed	David Howard, James Knox, David Long, Lee Miller, John Thomas and Greg Cmarik
48	302	Investigation of desiccants and CO2 sorbents for advanced exploration systems 2015-2016	James Knox, Gregory Cmarik, David Watson, Lee Miller, Philip West and Charles Wingard
77	302	Advanced Supported Liquid Membranes for Carbon Dioxide Control in Cabin Applications	David Wickham, Cinda Chullen, Kevin Gleason and Jeffrey Engel
80	302	QinetiQ evaluation of Nano-Porous Solutions Ltd Adsorbent Media Tube (AMT) technology	Gareth Toft
91	302	The Fate of Trace Contaminants in a Crewed Spacecraft Cabin Environment	Jay Perry and Matthew Kayatin
103	302	Using the International Space Station (ISS) Oxygen Generation Assembly (OGA) Is Not Feasible for Mars Transit	Harry Jones
127	302	Development of a Microwave Regenerative Sorbent-based Hydrogen Purifier	Richard Wheeler, Ross Dewberry, Bryan McCurry, Morgan Abney and Zach Greenwood
144	302	An Advanced CO2 Removal System using Regenerable Solid Amines	William Papale, Timothy Nalette, Michael Heldmann and Jorge Hidalgo
148	302	Sorbent Structural Testing for Advanced Exploration Systems	David Watson, James Knox, Philip West and Richard Bush
165	302	CO2 Control in Space Station and Space Suit by Novel Facilitated Transport Membranes	Osamu Okada, Msaaki Teramoto, Nobuaki Hanai, Jyunya Miyata, Yasato Kiyohara and Masato Sakurai
167	302	Concept for Increasing Water Recovery by Use of Series Reverse Water-Gas Shift - Sabatier Technology	Benjamin Portner and Jonas Schnaitmann
169	302	Visible-Light-Responsive Photocatalysis: Ag-Doped TiO2 Catalyst Development and Reactor Design Testing	Janelle Coutts, Paul Hintze, Anne Meier, Robert Devor, Jan Surma, Phillip Maloney, Brint Bauer, Malay Shah and David Mazyck
204	302	Study of Water Electrolysis under Microgravity Condition for Oxygen Generation	Masato Sakurai
262	302	Demonstration of Robustness and Integrated Operation of a Series-Bosch System	Morgan Abney, Matt Mansell, Christine Stanley, George Barnett and Ryan Kent
265	302	Hydrogen Purification and Recycling for an Integrated Oxygen Recovery System Architecture	Morgan Abney, Zach Greenwood, Terry Wall, Lee Miller, Mononita Nur, Richard Wheeler and Joshua Preston
272	302	Solid Oxide Electrolysis and Nafion System Architecture for Oxygen Recovery and Fuel Production	Christie Iacomini and Barry Finger
287	302	Self-Cleaning Boudouard Reactor for Full Oxygen Recovery from Carbon Dioxide	Paul E. Hintze, Anthony C. Muscatello, Tracy L. Gibson, James G. Captain, Griffin M. Lunn, Robert W. Devor, Brint Bauer and Steve Parks
321	302	Measuring Polanyi Potentials for Chemsorb 1000 and Chemsorb 3800	Oscar Monje, Jan Surma, Jay L. Perry and Matthew J. Kayatin
378	302	CO2 removal system for Manned Mission beyond LEO using deep space radiators and solar heaters	Jordi Paredes Garcia, Barry Nakazono, Gerald Voecks, Jack Jones, Darrell Jan and John Hogan
391	302	Carbon Dioxide Reprocessing Subsystem for Loop Closure as part of the Regenerative Life Support System ACLS	Fabian Kappmaier, Johannes Witt and Carsten Matthias
392	302	Astrine TM -based Carbon-dioxide Adsorber for Life Support on the International Space Station	Jochen Sußmann, Lena Reuer, Carsten Matthias and Johannes Witt
404	302	CDRA-4EU Testing in Support of ISS	Warren Peters, Christine Stanley and James Knox
417	302	Design Status of the Advanced Closed Loop System ACLS for Accommodation on the ISS	Klaus Bockstahler, Ruediger Hartwich, Carsten Matthias, Daniele Laurini, Johannes Witt and Scott Hovland
425	302	Carbon Dioxide Removal Technologies for Space Vehicles - Past, Present, and Future	Dale Winton, Jun Isobe, Phoebe Henson, Allen MacKnight, Stephen Yates and Daryl Schuck

14	303	Selection of a Brine Processor Technology for NASA Manned Missions	Donald Carter and Andrew Gleich
28	303	Design and operation of water recovery systems for space stations	Leonid Bobe, Alexey Kochetkov, Sergey Romanov, Peter Andreychuk, Alexander Tsygankov, Alexander Korobkov, Alexander Zeleznyakov and Yuriy Sinyak
81	303	Testing Aquaporin Inside™ Membrane on the International Space Station	Maja Bender Tommerup, Kim Kleinschmidt, Jörg Vogel, Michael Flynn and Hali Shaw
131	303	WATER PHYSIO-CHEMICAL CHARACTERISTICS MEASUREMENT AND MANAGEMENT	Luciano Battocchio, Marco Adami and Giuseppe Bonzano
136	303	Silver Ion Biocide Delivery System for Water Disinfection	Benjamin Slote, Edward Salley, Daniel Carr, Michael Kimble and Niklas Adam
142	303	Development of the Continuous-fill Brine Evaporation Bag (BEB) System	Lance Delzeit, Anna Hayden, Caleb Felker, Hali Shaw, David Beeler and Kevin Howard
143	303	Results of the FY15 Brine Evaporation Bag (BEB) Technology Down-Select Testing	Lance Delzeit, Anna Hayden, Caleb Felker, Hali Shaw, David Beeler and Kevin Howard
183	303	Testing of synthetic biological membranes for forward osmosis applications	Jurek Parodi, Michael Flynn, Jaione Romero-Mangado, Ofir Stefanson, Rocco Mancinelli, Serena Trieu and Brian Kawashima
187	303	Flux recovery of a forward osmosis membrane after a fouling process	Jaione Romero-Mangado, Jurek Parodi, Sonia Gamboa-Vazquez, Ofir Stefanson, Diana Diaz-Cartagena and Michael Flynn
190	303	FOST 2 upgrade with hollow-fiber CTA FO module and generation of osmotic agent for microorganism growth studies	Jurek Parodi, Jaione Romero-Mangado, Michael Flynn, Ofir Stefanson, Hali Shaw and David Beeler
218	303	Development of Advanced ISS-WPA Catalysts for Organic Oxidation at Reduced Pressure and Temperature	Ping Yu, Timothy Nalette and Matthew Kayatin
269	303	Synthetic Biological Membrane	Michael Flynn, Jaione Romero, Jurek Parodi, Rocco Mancinelli, Michael Dougherty and David Loftus
273	303	Forward Osmosis Brine Drying	Michael Flynn, Hali Shaw, Deirdre Hyde, Lance Delzeit and Ofir Stefanson
324	303	Evaluation of Aquaporin Membranes Using ISS Humidity Condensate Ersatz Wastewater	Hali Shaw, Michael Flynn, Jurek Parodi, Ofir Stefanson, Thomas Andersen, Jörg Vogel, David Beeler, Janelle Coutts and Matthew Kayatin
338	303	Design Status of the Capillary Brine Residual in Containment Water Recovery System	Miriam Sargusingh and Michael Callahan
343	303	Contaminant Permeation in the Ionomer-membrane Water Processor (IWP) System	Laura Kelsey, Barry Finger, Patrick Pasadilla and Jay Perry
369	303	Improvement of the distillation methods by using centrifugal forces for water recovery in space flight application	Vladimir Rifert, Petr Barabash and Vladimir Usenko
413	303	Investigations into the Performance of Membrane-Aerated Biological Reactors Treating a Space Based Waste Stream	Ritesh Sevanthi, Dylan Christenson, William Jackson, Audra Morse, Caitlin Meyer, Leticia Vega and Sarah Shull
416	303	Chemical Characterization and Identification of Organosilicon Contaminants in ISS Potable Water	John E. Straub II, Debrah K. Plumlee, Daniel B. Gazda and William T. Wallace
445	303	Silver deposition on wetted materials used in the potable water system of manned spacecrafts	Maria Petala, Vasilios Tsiridis, Efthymios Darakas, Ioanna Mintsouli, Sotirios Sotiropoulos, Margaritis Kostoglou, Thodoris Karapantsios and Pierre Rebeyre
123	304	A Robust, Gravity-Insensitive, High-Temperature Condenser for Water Recovery	Weibo Chen, Thomas Conboy and Michael Ewert
150	304	Demonstration of Nautilus Centripetal Capillary Condenser Technology	Richard Wheeler, Linh Tang, Spencer Wambolt, Eric Gollhofer and Juan Agui
341	304	Torrefaction Processing for Human Solid Waste Management	Michael Serio, Marek Wójtowicz, Joe Cosgrove, Thomas Stapleton, Tim Nalette, Michael Ewert, Jeffrey Lee and John Fisher

377	304	Space Mission Utility and Requirements for a Heat Melt Compactor	John Fisher and Jeffrey Lee
313	305	Effects of Material Choice on Biocide Loss in Orion Water Storage Tanks	William Wallace, Sarah Castro-Wallace, C.K. Mike Kuo, Leslie Loh, Edgar Hudson, Daniel Gazda and John Lewis
322	305	Qualification of the Boeing Starliner Humidity Control Subassembly	Christie Iacomini, Josh Hecht, James Harrell and John Lumpkin
74	307	U.S. Spacesuit Knowledge Capture Accomplishments in Fiscal Year 2015	Cinda Chullen and Vladenka Oliva
225	307	NASA Johnson Space Center (JSC) Small Business Innovation Research (SBIR) Successes, Infusions and Commercializations and Potential International Partnering Opportunities	Kathryn Packard, Doug Goodman and James Whittington
329	307	Z-2 Space Suit: A Case Study in Human Spaceflight Public Outreach	Shane McFarland
331	307	Collaboration Strategies within NASA: How to Create New Partnerships	Carissa Callini and Elizabeth Richard
447	307	Life Support and Environmental Monitoring International System Maturation Team Considerations	Molly Anderson, Robyn Gatens, Toshitami Ikeda, Tsuyoshi Ito, Johannes Witt and Scott Hovland
134	308	Carbon Dioxide Collection and Pressurization Technology	Karen Jayne, Daniel Carr and Michael Kimble
264	308	Life Support Catalyst Regeneration Using Ionic Liquids and In Situ Resources	Morgan Abney, Laurel Karr, Steve Paley and David Donovan
308	308	Evaluation of CO2 Adsorber, Sabatier Reactor, and Solid Oxide Stack for Consumable, Propellant, and Power Production – Potential in ISRU Architecture	Christian Junaedi, Kyle Hawley, Saurabh Vilekar and Subir Roychoudhury
314	308	Electrochemical Carbon Dioxide Reduction with Room Temperature Ionic Liquids for Space Exploration Missions	Jordan Holquist, David Klaus, James Nabity and Morgan Abney
50	400	Development and Testing of a Commercial Intravehicular Activity (IVA) Space Suit	Ted Southern, Nikolay Moiseev and Miguel Iturmendi
60	400	Development and Evaluation of Titanium Space Suit Bearings	Richard Rhodes, Brian Battisti, Ray Ytuarte and Bradley Schultz
149	400	Pilot Investigation of a Novel Technique for Measuring Dynamic Body-Garment Contact	Crystal Compton and Lucy Dunne
182	400	Investigating the Feasibility of Utilizing Carbon Nanotube Fibers for Spacesuit Dust Mitigation	Kavya K. Manyapu, Leora Peltz, Pablo de Leon, James R. Gaier, Dmitri Tsentlovich, Carlos Calle and Paul Mackey
214	400	Z-2 Threaded Insert Design and Testing	Robert Jones, David Graziosi, Jinny Ferl, Mitch Sweeney, Richard Rhodes, Amy Ross and Stephen Scarborough
263	400	Characterization of the Nasal Cannula as a Carbon Dioxide Washout Measurement Technique in the Mark III Space Suit	Ian Meginnis, Jason Norcross, Omar Bekdash and Robert Ploutz-Snyder
278	400	Development Of An Objective Space Suit Mobility Performance Metric Using Metabolic Cost And Functional Tasks	Shane McFarland and Jason Norcross
298	400	Failure Simulation Testing of the Z-1 Spacesuit Titanium Bearing Assemblies	Stephen Peralta, Alfredo Juarez, Jonathan Tylka and Richard Rhodes
301	400	Z-2 Architecture Description and Requirements Verification Results	David Graziosi, Robert Jones, Jinny Ferl, Steve Scarborough, Linda Hewes, Amy Ross and Richard Rhodes
159	401	Inner Space: Some Thoughts on Inside Hand Access for a Surface EVA Suit	Timothy Lexen
290	401	Integrated EVA Thermal Simulations using TherMoS and V-SUIT	Andrew Cusick, Matthias Killian and Claas Olthoff
319	401	Results from the 3-D Wissler Human Thermal Model for a Space Suit and PLSS in representative exploration environments	Thomas Cognata
370	401	Integrated Extravehicular Activity (EVA) Human Research Plan: 2016	Andrew Abercromby, Scott Cupples, Sudhakar Rajulu, Jesse Buffington, Jason Norcross and Steven Chappell
381	401	A Geology Sampling System for Small Bodies	Adam Nails, A. Drew Hood, Trevor Graff, Paul Abell and Jesse Buffington
412	401	High Performance Torso Cooling Garment	Bruce Conger and Janice Makinen

71	402	Results from Carbon Dioxide Washout Testing Using a Suited Manikin Test Apparatus with a Space Suit Ventilation Test Loop	Cinda Chullen, Bruce Conger and Summer Mcmillin
73	402	Design and Development Comparison of Rapid Cycle Amine 1.0, 2.0, and 3.0	Cinda Chullen, Colin Campbell, William Papale, Bruce Conger and Summer Mcmillin
75	402	Continued Development of Compact Multi-gas Monitor for Life Support Systems Control in Space	Jesus Delgado Alonso, Cinda Chullen, Gregory Quinn, David Berry and Paul Dicarmine
76	402	Optical Breath Gas Extravehicular Activity Sensor for the Advanced Portable Life Support System	William Wood, Miguel Casias, Jeffrey Pilgrim, Cinda Chullen and Colin Campbell
86	402	Space Suit Portable Life Support System (PLSS) 2.0 Pre-Installation Acceptance (PIA) Testing	Ian Anchondo, Marlon Cox, Carly Watts, David Westheimer and Matthew Vogel
87	402	Space Suit Portable Life Support System (PLSS) 2.0 Human-in-the-Loop (HITL) Testing	Carly Watts and Matthew Vogel
217	402	PLSS 2.5 Fan Design and Development	Gregory Quinn, David Converse, Michael Carra and Cinda Chullen
221	402	Redesign of the Extravehicular Mobility Unit Airlock Cooling Loop Recovery Assembly	John Steele, Barbara Peyton, Tony Rector, Mallory Jennings and Theresa Elms
232	402	Design of a Lithium Chloride Absorber Radiator for Flight Testing on an Extravehicular Mobility Unit	Michael Izenson, Scott Phillips, Ariane Chepko, Gregory Quinn, John Steele and Grant Bue
239	402	Advanced Space Suit PLSS 2.0 Cooling Loop Evaluation and PLSS 2.5 Recommendations	John Steele, Gregory Quinn, Carly Watts, Janice Makinen, Colin Campbell and David Westheimer
289	402	Integrated Thermal Simulation of the Space Evaporator Absorber Radiator using TherMoS and V-SUIT	Daniel Gierszewski and Claas Olthoff
345	402	Co-Adsorption of Ammonia and Formaldehyde on Regenerable Carbon Sorbents for the Primary Life Support System (PLSS)	Marek A. Wojtowicz, Joseph E. Cosgrove, Michael A. Serio and Monique S. Wilburn
61	403	Extravehicular Activity Development of Unforeseen International Space Station Maintenance	Sarah Korona
348	403	Reduced Gravity Control of Small Spacecraft using Control Moment Gyroscopes and On-Off Thrusters	Todd Sheerin, Jose Gomez, Danilo Roascio and Jeffrey Hoffman
405	403	EVA Wiki – Transforming Knowledge Management for EVA Flight Controllers and Instructors	Stephanie Johnston, Edwin James Montalvo, Lawrence Daren Welsh, Scott Wray, Costa Mavridis and Brian Alpert
12	404	Assessment of Ethanol Trend on ISS	Daniel Gazda, Torin McCoy, Thomas Limerio, Jay Perry, Donald Carter and Matthew Kayatin
15	404	Design and Delivery of Filter for Removal of Siloxanes from ISS Atmosphere	Donald Carter, Matthew Kayatin, Mark Wilson, Jay Perry, Tony Rector, Juan Agui, Gregory Gentry, Elizabeth Bowman and Robert Greene
16	404	Upgrades to the ISS Water Recovery System	Matthew Kayatin, Donald Carter, Jennifer Pruitt and Richard Schunk
17	404	Status of ISS Water Management and Recovery	Donald Carter, Ryan Schaezler, Lyndsey Bankers, Daniel Gazda, Chris Brown, Jesse Bazley and Jennifer Pruitt
105	404	How Do Lessons Learned on the International Space Station (ISS) Help Plan Life Support for Mars?	Harry Jones, Edward Hodgson, Mark Kliss and Gregory Gentry
362	404	International Space Station Major Constituent Analyzer On-orbit Performance	Ben Gardner, Phillip Erwin, Rachel Chladek and Chris Matty
406	404	International Space Station (ISS) Environmental Control and Life Support (ECLS) System Overview of Events: 2014 - 2015	Gregory Gentry
32	500	Mass Measurement Capability for Small Masses in Microgravity Environment	John Wetzel, Robert Morrow, Daniel Wyman, Russell Wallace, Gregory Ladwig, Robert Surdyk, David Barkow and Robert Richter
205	500	Preparatory ground-based experiments on cultivation of Chlorella vulgaris for the ISS experiment PBR@LSR	Harald Helisch, Jochen Keppler, Jens Bretschneider, Stefan Belz, Norbert Henn, Stefanos Fasoulas and Peter Kern
234	500	Midland Altitude Chamber Complex	Dennis Gilliam, Livingston Holder, Laverne Bjerke and Ken Doyle

320	500	A New Plant Habitat Facility for the ISS	Robert Morrow, Robert Richter, Guillermo Tellez, Oscar Monje, Raymond Wheeler, Gioia Massa, Nicole Dufour and Bryan Onate
360	500	A Low-power medical Oxygen Concentrator	Gokhan Alptekin, Douwe Bruinsma, Ambalavan Jayaraman, Casey Bernal and Byron Wall
418	500	A CO2 controller enabling cell culture research inside automated incubator onboard the ISS	Stuart Tozer, Louis Stodieck, Alexander Hoehn and Jonathan Anthony
107	501	NASA's Rejection of Reality Caused the Challenger Calamity and Suggests Organizational Psychosis	Harry Jones
138	501	A Tale of Two Chambers: Iterative Approaches and Lessons Learned from Life Support Systems Testing in Altitude Chambers	Gianluca Callini
184	501	Human-Rating Mission Design for Gemini Mars Mission	Hiroyuki Miyajima
344	501	Increasing the Fidelity of Maintenance Logistics Representation in Breakeven Plots	Andrew Owens and Olivier de Weck
450	501	Environmental Control and Life Support for Deep Space Travel	Thomas Stapleton, Micheal Heldmann, Scott Schneider, Jonathan O'Neill, Darren Samplatsky, Kimberly White and Roger Corallo
19	502	Habitat design – Mars ex-situ and in-situ resources utilization	Misael Sousa
22	502	A mission concept to study multigenerational mammalian reproduction	Erica Rodgers, Matt Simon, Patrick Chai, Weston Lewis, Jim Neilan, Fred Stillwagen and Phillip Williams
49	502	Space Architecture for MoonVillage	Brent Sherwood
67	502	Roll SEED Roll: An Architectural Assessment of a Spherical Mobile Habitat for Mars (SEED_Spherical Environment Exploration Device)	Kursad Ozdemir and Muge Halici
151	502	Design of a human settlement on Mars using in-situ resources	Marlies Arnhof
158	502	Polar Research Facilities: living in isolation	Hugh Broughton
194	502	Artificial Gravity in Theory and Practice	Theodore W. Hall
222	502	Mars Ice House: Using the Physics of Phase Change in 3D Printing a Habitat with H2O	Christina Ciardullo, Michael Morris, Kelsey Lents, Jeffrey Montes, Melodie Yashar, Ostap Rudakevych, Masayuki Sono and Yuko Sono
226	502	Lunar Surface Habitats as a Development Opportunity for Mars Surface Life Support Systems	Gregory Gentry, Matt Duggan, William West and Darren Samplatsky
252	502	SHEE – a Self-deployable Habitat for Extreme Environments – Exploitation and lessons learnt from testing	Barbara Imhof, Joshua Nelson, Hemanth-Kumar Madakashira, Peter Weiss, Alvo Aabloo and David Ševčík
297	502	Structural Design Criteria for Planetary Bases: Adaptation of Approaches used in Design of Nuclear Facilities on Earth	Anton Andonov
367	502	Review of Existing and New Proposal of Space Habitats with Earth Applications	Irene Lia Schlacht, Bernard Foing, Olga Bannova, Frans Blok, Alexandre Mangeot, Kent Nebergall, Ayako Ono, Daniel Schubert and Agata Maria Kołodziejczyk
375	502	Bionomic Design Countermeasures for Enhancing Cognitive and Psychological Functioning and Crew Performance in Isolated and Confined Habitats	Sheryl Bishop, Sandra HÄuplik-Meusburger, Jamie Guined and Regina Peldszuz
399	502	The Necessity of the Landscape Architect as a Voice in the Continued Dialogue on Space Exploration	Justin Benjamin
29	503	Effects of Updated Trapped Radiation Environment on the ISS Dosimetric Measurements	Francis Badavi
59	503	Crew Radiation Exposure Estimates from GCR and SPE Environments During a Hypothetical Mars Mission	Natalie McGirl, A.J. Pawel, Daniel Schappel, Jacob Shamblin, Timothy Younkin and Lawrence Townsend
124	503	Investigation of Lithium Metal Hydride Materials for Mitigation of Deep Space Radiation	Kristina Rojdev and William Atwell
398	503	Secondary Neutron Yields Produced by Thick-Target Aluminum Interactions	Natalie McGirl, Luis Castellanos, Ashwin Srikrishna and Lawrence Heilbronn

437	503	Radiation measurements of the Mars Science Lab Radiation Assessment Detector (MSL-RAD) on the surface of Mars	Guenther Reitz, Donald M. Hassler, Robert F. Wimmer-Schweingruber, Carry Zeitlin, Daniel Matthiae, Bent Ehresmann, Jingnan Guo and Jan Koehler
453	503	Probability Estimates of Solar Proton Doses During Periods of Low Sunspot Number for Short Duration Missions	William Atwell, Allan Tylka, William Dietrich, Kristina Rojdev and Courtney Matzkind
40	506	NASA Environmental Control and Life Support (ECLS) Technology Development and Maturation for Exploration: 2015 to 2016 Overview	Walter Schneider, Robyn Gatens, Molly Anderson, James Broyan, Ariel Macatangay, Sarah Shull, Jay Perry and Nikzad Toomarian
44	506	Understanding the NASA TA6: Human Health, Life Support, and Habitation Systems Technology Roadmap	Mark Kliss
108	506	Developing the Water Supply System for Travel to Mars	Harry Jones, John Fisher, Lance Delzeit, Michael Flynn and Mark Kliss
140	506	Exploration Mission Benefits From Logistics Reduction Technologies	James Broyan, Thilini Schlesinger and Michael Ewert
162	506	Dental Treatment during a human Mars Mission with remote support and advanced technology	Sandra Häuplik-Meusburger, Herwig Meusburger and Ulrich Lotzmann
332	506	Advances in Planetary Protection Ahead of the "Journey to Mars"	J Andy Spry, John D Rummel, Margaret S Race, Bette Siegel and Catharine A Conley
111	508	Humans to Mars Will Cost About "Half a Trillion Dollars" and Life Support Roughly Two Billion Dollars	Harry Jones
419	508	Sensitivity Analysis of the Advanced Missions Cost Model	Andrew Owens and Olivier de Weck
38	509	Laboratory Evaluation of Nomex® IIIA as a Flammability Barrier Material in a variable oxygen and pressure atmosphere	Wei Shang and James T'ien
79	509	The Effect of Gravity on Flame Spread over PMMA Cylinders in Opposed Flow with Variable Oxygen Concentration.	Shmuel Link, Xinyan Huang, Sandra Olson, Paul Ferkul and Carlos Fernandez-Pello
115	509	Effect of flow direction on the extinction limit of spreading flame over wire insulation	Masashi Nagachi, Fumiya Mitsui, Koki Kizawa, Jean-Marie Citerne, Hugo Dutilleul, Grunde Jomaas, Guillaume Legros and Osamu Fujita
161	509	Opposed Flame Spread over Polyethylene Insulated Wires under Varying External Radiations and Oxygen Concentrations	Kyosuke Miyamoto, Xinyan Huang, Nozomu Hashimoto, Osamu Fujita and Carlos Fernandez-Pello
318	509	Fire Detection tradeoffs as a function of Vehicle Parameters	David Urban, Daniel Dietrich, John Brooker, Marit Meyer and Gary Ruff
350	509	Development Status of the Solid Combustion Experiment Module for Material Flammability Experiments on the ISS/Kibo	Masao Kikuchi, Masaki Nokura, Takuma Suzuki, Aki Hosogai, Masato Katsuta, Hideki Saruwatari, Yasuhiro Nakamura, Shin Yamamoto, Yoshimasa Goto, Yusuke Sakaino and Yasuyuki Hisashi
361	509	An Advanced Smoke-Eater and Ammonia Filter for Post-Fire Cabin Atmosphere Cleanup	Gokhan Alptekin, Matthew Cates, Ambalavan Jayaraman, Steve Paglieri and Andrew Hagen
387	509	Boundary Layer Effect on Opposed-Flow Flame Spread in the Microgravity Regime	Subrata Bhattacharjee, Aslihan Simsek and Luca Carmignani
395	509	Effects of Gravity and Flow Velocity on Ignition Characteristics of MMA/Air and DME/Air Mixtures	Yoshinari Kobayashi, Shinji Nakaya and Mitsuhiro Tsue
428	509	Operation and Development Status of the Spacecraft Fire Experiments (Saffire)	Gary Ruff and David Urban
93	510	Particulate Filtration Design Considerations for Crewed Spacecraft Life Support Systems	Juan Agui, R. Vijayakumar and Jay Perry
281	510	Filter efficiency and leak testing of returned ISS bacterial filter elements (BFEs) after 2.5 years of continuous operation	Robert Green, Juan Agui, Gordon Berger, Rajagopal Vijayakumar and Jay Perry
309	510	Filtration of carbon particulate emissions from a Plasma Pyrolysis Assembly Reactor	Juan Agui, Robert Green, R Vijayakumar, Gordon Berger, Zach Greenwood, Morgan Abney and Elspeth Peterson
95	511	Human Factor Analysis of Light Emitting Diode Technologies for Aerospace Suitability in Human Space Flight Applications	Todd Treichel

96	511	Solar Array (Radiated/Non-Radiated): Materials Characterization and Cryogenic Thermal Cycling Qualification for Europa Clipper Mission (ECM) Project	Rajeshuni Ramesham, Stephen F. Dawson and Antonio Ulloa-Severino
113	511	We Can't Count on Repairing All Failures Going to Mars	Harry Jones
294	511	ECLSS Reliability Analysis Tool for Long Duration Spaceflight	Gisela Detrell, Ernst Messerschmid and Eulàlia Gríful Ponsati
300	511	Distinctions between actual and apparent dithering thermostats	Gordon Cucullu, Nick Emis and Jennifer Miller
276	513	Coupled CFD-PBE Predictions of Renal Stone Size Distributions in the Nephron In Microgravity	Mohammad Kassemi, Elise Griffin and David Thompson
423	513	A New Human Thermal Model for the Dynamic Life Support System Simulation V-HAB	Jan Weber and Jonas Schnaitmann