

ISMSE 2015 – Final Program

MONDAY, JUNE 22

From 8:30 REGISTRATION and Welcome Coffee

10:15 – 12:30 OPENING SESSION

10:15 – 10:30 **Introduction - Welcome**

10:30 – 11:10 **On Overview of ESA's ATV missions to the ISS**

Charlotte Beskow – ESA, ATV Operations Interface Manager

Overview of Rosetta Mission and feedbacks

11:10 – 11:50 Philippe Gaudon – CNES

Jean-Pierre Lebreton - CNRS-LPC2E

11:50 – 12:30 **EOR: how severe can the radiation environment be?**

Sébastien Bourdarie – ONERA

12:30 – 14:00 LUNCH

14:00 – 16:00 Session 1: CONTAMINATION (1)

Chairpersons: A. Saverino, D. Faye

14:00 – 14:20 **Assessment of materials with outgassing properties out of specifications**

B. Zitouni, R. Migliore - OHB

Vibrational spectroscopy for detection of molecular contamination in space industry

L. Mandrile - Università degli Studi di Torino

14:20 – 14:40 A. M. Giovannozzi - Istituto Nazionale di Ricerca Metrologica

A. Saverino, A. Pandi - Thales Alenia Space Italia S.p.a.

A. M. Rossi - Istituto Nazionale di Ricerca Metrologica

In-situ ice formation investigation

14:40 – 15:00 B. Bras, P. Janik, R. Martins, R. Rampini - ESA

New development for particle deposition monitoring during space instrument integration in cleanroom

N. Menant, D. Faye, F. Bourcier - CNES

15:00 – 15:20 P. Nouet, L. Latorre - LIRMM

X. Lafontan - INTESENS

D. Lellouchi - FIALAB

Investigation of the electron emission proprieties of Ag: from technical Ag surface to ion-cleaned Ag surface.

15:20 – 15:40 T. Gineste, M. Belhaj - ONERA

G. Teyssedre - LAPLACE

J. Puech - CNES

Cleanrooms for sensitive equipment and manufacturing processes regarding molecular organic contamination (MOC): From material classification to controlled air quality

15:40 – 16:00 M. Keller, S. Weisser, U. Gommel - Fraunhofer Institute

16:00 – 16:20 COFFEE BREAK

16:20 – 18:00 Session 2: SYNERGIES - CHARGING (1)

Chairpersons: T. Paulmier

16:20 – 16:40 **Thermal performance degradation of spacecraft radiator by outgassing of adhesives in space environment**

Y. Shibano, H. Ogawa, K. Asamura, T. Takashima - JAXA

16:40 – 17:00 **Improvements in Modeling Thruster Plume Erosion Damage to Spacecraft Surfaces**

C. Soares, R. Olsen, C. Steagall, A. Huang, B. Myers, R. Mikatariyan - BOEING

17:00 – 17:20 **Material characterization and assessment for the JUICE mission**

F. Panin, M. Malicki - ESTEC

Influence of thermal treatment on electrical and physical properties of coated ceramics for spacecraft application

17:20 – 17:40

K. Guerch, T. Paulmier - ONERA

J.R. Dennison, J. Dekany - Utah State University

S. Guillemet-Fritsch, P. Lenormand - CIRIMAT

17:40 – 18:00

Short poster introductions: contamination , synergies

8:30 – 10:10	<p>Session 3: EXTREME ENVIRONMENTS Chairpersons: D. Nikanpour, M. Nikulainen</p> <p>An overview of the latest materials engineering challenges for the preparation of ESA's Mercury mission</p> <p>C. Semprimoschnig, Y. Butenko, A.W. Polsak - ESA</p> <p>Thermal radiative properties at very high temperatures of materials (pBN and refractory metals) for the Solar Probe Plus mission</p> <p>M. Balat-Pichelin, E. Brodu - PROMES-CNRS</p> <p>Ceramics black surface treatment for extreme temperature applications</p> <p>E. Renard - AIRBUS DS</p> <p>9:10 – 9:30 S. Shrestha - Keronite Int. Ltd C. Puig - AIRBUS DS</p> <p>Synergy between temperature and high UV acceleration on materials</p> <p>9:30 – 9:50 S. Duzellier, C. Pons, P. Reulet - ONERA C. Tonon, S. Dagrás, T. Mc Caul - Airbus DS A. Polsak, C. Semprimoschnig - ESA</p> <p>9:50 – 10:10 Behavior of high pressure vessels under an hypervelocity impact P.-L. Hereil, J. Mespoulet, F. Plassard - Thiot Ingénierie</p> <p>10:10 – 10:30 COFFEE BREAK</p>
10:30 – 12:00	<p>Session 4: GROUND TESTING (1) Chairpersons: C. Semprimoschnig</p> <p>Particle flux effects on physico-chemical polymer degradations</p> <p>S. Dagrás - Airbus Defence and Space S. Duzellier - ONERA J. Eck - TRAD</p> <p>10:30 – 10:50 H. Jochem - Thales Alenia Space E. Laurent - CNES S. Lewandowski - ONERA C. Ongaretto - Thales Alenia Space V. Rejsek-Riba - ONERA</p> <p>Characterisation of surface properties of laser retro-reflector retrieved from the International Space Station</p> <p>10:50 – 11:10 M. Malicki, A. Bolkhovitinov, Y. Butenko, A. Deep, D. Doyle, U. Lafont, O. Mongrard, G. van Papendrecht, C. Semprimoschnig - ESA</p> <p>Comparative testing and evaluation of vulnerable external infrastructure materials and components for lunar applications</p> <p>11:10 – 11:30 Z. Iskanderova, J. Kleiman - Integrity Testing Laboratory Inc. A. Grigorevski, L. Kisileva - Public Joint Stock Company "Kompozit" M. Kenny - Alion Science and Technology S. Remaury - CNES</p> <p>11:30 – 12:00 Short poster introductions: ground testing</p> <p>12:00 – 13:30 LUNCH</p>
13:30 – 15:50	<p>Session 5: CONTAMINATION (2) Chairpersons: C. Soares, M. van Eesbeek</p> <p>Evaluation of the contamination impact on various spacecraft instruments</p> <p>13:30 – 13:50 B. Zitouni - OHB</p> <p>Recent advances in numerical simulation for outgassing at Airbus Defence and Space</p> <p>13:50 – 14:10 G. Chanteperrix, C. Théroude, T. Soriano - Airbus Defence and Space</p> <p>Numerical calculations of optical properties of silicone-contamination films</p> <p>14:10 – 14:30 K. Shimazaki, Y. Miura, O. Numata, E. Miyazaki, Y. Kimoto, K. Suzuki - JAXA</p>

	UV fixation of molecular contamination: numerical implementation and validation of a physical model
14:30 – 14:50	J.F. Roussel, E. Vanhove, T. Tondu - ONERA D. Faye, P. Guigue - CNES
	Analytical results on the optical influence of UV- and AO-irradiated silicone contaminants
14:50 – 15:10	R. Yamanaka, K. Mori, Y. Miura, O. Numata, E. Miyazaki, Y. Kimoto - JAXA
	Understanding the effect of material selection and testing on the long-term degradation of optical payloads
15:10 – 15:30	C. Maag - T&M Engineering, Inc. J. Gasbarre - NASA Langley Research Center S.M. Scolari - Thales Alenia Space - Italia A. Panetta - NASA Langley Research Center M. Giuliani, C. Lobascio - Thales Alenia Space - Italia
	Collaborative activities between JAXA and ESA/ESTEC in materials and contamination fields
15:30 – 15:50	E. Miyazaki - JAXA R. Rampini - ESA-ESTEC Y. Miura - JAXA P. de Heij - ESA O. Numata, R. Yamanaka, K. Shimazaki, Y. Kimoto - JAXA
15:50 – 16:10	COFFEE BREAK

16:10 Poster session 1

GROUND TESTING

Strategies for improvement of radiation resistance of white ceramics coatings: experimental results and degradation mechanisms

V. Rejsek, S. Duzellier, S. Lewandowski, T. Paulmier, C. Pons - ONERA
C. Tonon, S. Dagrass, C. Perrin - Airbus Defence and Space / C. Casademont, F. Ansart, L. Arurault, P. Lenormand - CIRIMAT
E. Amorim - ESA/ESTEC

Development of new irradiation facilities for material testing

J. Eck, D. Lavielle, M. Thibaut – TRAD

ESTEC's STAR-II facility

A. Polsak, B. Bras, H. Blaauw, C. Semprimoschnig - ESA/ESTEC

Lifetime prediction of scotchweld EC 2216 B/A epoxy adhesive for telecommunications applications using time temperature superposition technique

V. Cesar-Auguste, J. Williamson, C. Semprimoschnig, J.M. Perdigues Armengol - ESA-ESTEC

Induction periods in the kinetics of mass losses of polymeric materials during their destruction by VUV radiation and fast atomic oxygen

V. Skurat, V.L. Talrose - Institute for Energy Problems of Chemical Physics, Russian Academy of Sciences

First results of in-situ Raman spectroscopy measurements in the STAR-II facility at ESTEC-ESA

B. Bras, Y. Butenko, C. Semprimoschnig – ESA-ESTEC

Study on the mechanical property and degradation mechanism of polyimide film in space environments

Z. Shen - Beijing Institute of Spacecraft Environment Engineering

Mechanical testing and characterization of full size thin shell CFRP booms for the DLR solar sail demonstrator Gossamer-1

M. E. Zander - DLR – IAF

M. Sinapius – IAF / C. Hühne – DLR

On ground smart test rig for the verification and evaluation of metallic and ceramic materials testing in space propulsion relevant environment

S. Beyer, S. Schmidt-Wimmer, L. Wermuth - Airbus Defence and Space

New developments in space environment simulation equipment: update

J. Kleiman, S. Horodetsky, V. Issouppov, V. Verba - Integrity Testing Laboratory Inc.

Studies on degradation effects of indium tin oxide coated aluminized polyimide thin films under UV and proton radiation with the Complex Irradiation Facility

M. Dembska – DLR

Degradation of Spacecraft Thermal Control Materials under MEO Radiation Environment

Y. Ding, Z. Shen, X. Nie, Y. Zhnag - Beijing Institute of Spacecraft Environment Engineering

Large structures mechanical and electrical test at cryogenic temperatures

A. Carpio Rovira, A. Chapron - Applus Laboratories

Study on degradation mechanisms of ZnO-pigmented thermal control white paints in different space environments

Z. Shen, Y. Ding - Beijing Institute of Spacecraft Environment Engineering

The impact of Boron Nitride Filler on the Performance of Silicone Adhesives Under Cryogenic Conditions

J. Williamson, Y. Goebel, C. Semprimoschnig – ESA

Space materials and flight hardware compatibility with sterilization process

D.B. Margheritis, E.A. Nistico - Thales Alenia Space Italia S.p.a.

Space materials and flight hardware constraints arisen from biological contamination requirements

D.B. Margheritis, E.A. Nistico - Thales Alenia Space Italia S.p.a.

Simulation of the environmental conditions for plant growth on mars

Dmitry Horodetsky and Jacob I. Kleiman - Integrity Testing Laboratory Inc.

CONTAMINATION

Contamination risks related to additive manufacturing

D. Faye - CNES

K. Kiryukhina – FIALAB / F. Clément – CNES

Evolved gas estimation based on mass and surface area of organic materials

N. Baba - JAMSS

Y. Kimoto – JAXA

Assessment to determine the efficiency of the bake out conducted using parameters obtained from dynamic outgassing test

O. Ergincan, P. de Heij, R. Rampini – ESTEC

Optical materials analyses following laser induced damage in the Uvfrequency domain

Y. Butenko, A. Tighe, L. Mondin, C. Heese, A. Ciapponi, T. Ivanov, D. Wernham - ESA-ESTEC

Outgassing properties of space-bound materials

V. Issouпов, S. Horodetsky, J. Kleiman - Integrity Testing Laboratory Inc.

Air toxicity lessons learned and system impact from ATV 1-5

T. Rohr, C. Semprimoschnig, M. Stienstra, A. Bolkhovitinov – ESA

Photochemically enhanced contamination - synergetic effects between UV and outgassing of organic materials

N. Dias, L. Levan, R. Rampini - ESA / ESTEC

Improved long term outgassing predictions for materials with two distinct outgassing regimes

P. de Heij and R. Rampini- ESA / ESTEC

SYNERGIES AND CHARGING

Electrostatic discharges in spacecraft solar array protective coatings under electron radiation

R. Khasanshin - OAO "Kompozit" / L. Novikov - Lomonosow Moscow State Univ.y, Skobeltsyn Inst. of Nuclear Physics

Dielectric properties of white ceramic coatings

V. Cesar-Auguste, E. Amorim, C. Semprimoschnig - ESA-ESTEC

Analysis of mass loss of a polymeric composite under combined action of electron, proton and electromagnetic radiations

R. Khasanshin, A. Galygin - OAO "Kompozit"

Basic aspects of the assessment of material degradation in long-term missions in the Moon environment and outer space: the radiation-chemical approach

V. Feldman, A. Milinchuk - Lomonosov Moscow State University

Electrical property of ITO/kapton/Al anti-static thermal control coating in space radiation environments

X. Qiu, Y. Zhou, S. Bai - Nanchang Institute of Technology

8:30 – 10:10

Session 6: GROUND TESTING (2)

Chairpersons: S. Duzellier, M. Tagawa

An in-situ study on the thermal and UV degradation of space-grade silicones

8:30 – 8:50

K. Rasmussen, T. Rohr, C. Semprimoschnig - ESA-ESTEC
G. Grampp - Graz University of Technology

Black & white thermal control coatings

J. Kleiman - ITL Inc.

8:50 – 9:10

K. Shabtai, D. Katsir - Acktar Ltd.
V. Issoufov, S. Horodetsky - ITL Inc.
A. Duparre, A. von Finck - Fraunhofer IOF

Space environmental simulation on bulk alumina

9:10 – 9:30

R. Martins, L. Levan, C. Semprimoschnig – ESA-ESTEC

Space environmental qualification of novel candidate materials for multi-layer insulation

9:30 – 9:50

M. Moser, C. Ranzenberger - RUAG Space GmbH
V. Rejsek-Riba - ONERA

Research on thermal control material impact effect by micron space debris

9:50 – 10:10

J. Yang, Z. Ma - Beijing Institute of Spacecraft Environment Engineering

10:10 – 10:30

COFFEE BREAK

10:30 – 12:30

Session 7: SYNERGIES – CHARGING (2)

Chairpersons: C. Puig, J.-F. Roussel

Spacecraft charging sensitivity to material properties

10:30 – 10:50

J. Minow, D. Edwards - NASA, Marshall Space Flight Center

Effect of space environment on the electric properties of space-used materials

10:50 – 11:10

T. Paulmier, B. Dirassen - ONERA
M. Arnaout - Lebanese Int. Univ.
D. Payan - CNES

Influence of high-energy electron irradiation on the electrical properties of a space-used silicone elastomer

11:10 – 11:30

A. Roggero - ONERA & CIRIMAT
T. Paulmier - ONERA
E. Dantras - CIRIMAT
C. Tonon - Airbus Defence and Space
D. Payan - CNES
S. Dagrás - Airbus Defence and Space

Study of secondary arc occurrence on aged “grouted” solar cell coupons

11:30 – 11:50

J.M. Siguier, V. Inguibert, G. Murat – ONERA

Ion Beam Treatment of GEO Solar Array's flexible cable Conductors For Surface Charge Dissipation In Long-term Missions

11:50 - 12:10

Z. Iskanderova, J.kleiman - integrity testing laboratory Inc.
A.G rigorevski - public Joint Sotck Company "Konpozit"
C.Noemayr, C.Zimmermann -Astrium GmbH

12:10 – 12:30

Short poster introductions: new M&P

12:30 – 14:00

LUNCH

14:00 – 16:00

Session 8: NEW M&P (1)

Chairpersons: C. Durin, I. Gouzman

CNT-polyimide nanocomposites for space applications

14:00 – 14:20

N. Atar, E. Grossman, I. Gouzman, A. Bolker - Soreq NRC
Y. Hanein - Tel-Aviv University

Fast-curing process for MAP thermal control coatings

14:20 – 14:40

G. Sierra, P. Jugniot, O. Guillaumon - MAP
S. Remaury, P. Nabarra – CNES

	Design and measurement of radiowave transmissive thermal control mirror
14:40 – 15:00	K. Tomioka - Keio University S. Tachikawa, K. Kawahara - JAXA Y. Nagasaka - Keio University
	Stabilization to UV of polysiloxanes in geostationary environment
15:00 – 15:20	M. Planes - LCPO/CNES/ONERA S. Carlotti - LCPO S. Remaury - CNES S. Lewandowski - ONERA S. Sole – MAP
	Development of nano-hybrid transparent polymer films
15:20 – 15:40	V. Liedtke, L. Baca, N. Stelzer - Aerospace & Advanced Composites GmbH J. Eck, D. Lavielle - TRAD T. Rohr – ESTEC
15:40 – 16:00	Short poster introductions: new M&P
16:00 – 16:20	COFFEE BREAK

16:20 CONTAMINATION ROUND TABLE and POSTER SESSION 2 in parallel

NEW M&P

Materials characterisation of ALTA white paint coatings for small Geo mission

C. Mooney, J. Williamson, C. Semprimoschnig – ESA

The feasibility study of thermo-chromic paints for space usage as thermal control materials

M. Iwata, H. Ishihara - Kyushu Institute of Technology

A. Hasegawa - PILOT Corporation / Y. Shibahashi - The PILOT Ink Co. Ltd.

Development of space-qualified photocurable silsesquioxane-coated polyimide films

Y. Kimoto - JAXA

T. Fujita, N. Furuta, A. Kitamura, H. Suzuki - Toagosei Co., Ltd. / J. Ishizawa – JAXA

A black thermal control surface for the Solar Orbiter

B. Twomey - Enbio

K. Doherty - University College Dublin / S. McGlynn, J. Carton – Enbio / A. Norman – ESA / T. McCaul - Airbus

K. Stanton - University College Dublin

Enhancement of conductive lubricant films with CNT in space environment

K. Matsumoto, Y. Ohkawa - JAXA

M. Kawamura - Kawamura Research Laboratories, Inc.

Qualification of low and high emissivity coatings for performance enhancement of Sentinel 4

M. Pitzing, M. Graupner - Jena-Optronik

K. Shabtai, D. Katsir - Acktar Ltd.

Novel high specific stiffness materials for space applications

G. Mozdzen, M. Scheerer - Aerospace & Advanced Composites GmbH

A. Norman - ESA-ESTEC / E. Neubauer - RHP-Technology GmbH / H.G. Wulz - RTBV GmbH / A. Merstallinger, V. Liedtke - Aerospace & Advanced Composites GmbH

A structural and thermal evaluation of a CFRP material using K13C2U high thermal conductivity pitch fibre

T. Mccaul, K. Hassell - Airbus Defence and Space Ltd.

Organic semiconducting single crystals for a novel generation of large area, low-weight, room temperature radiation detectors

B. Fraboni, A. Ciavatti, L. Basirico – Dpt. of Physics and Astronomy – Univ. of Bologna

A. Fraleoni-Morgera – Dpt. of Engineering and Architecture – Univ. of Trieste

Space FML, a new family of space materials - Properties and performances of GLARE 1

J.W. Gunnink, J. Homan, P. Brand, J. Frudiger - GTM Advanced Structures

A. Tesch, T. Ghidini - ESA-ESTEC

Innovative silicone adhesives for process improvements

N. Zambon, J. Nguyen, V. Malave - NuSil Technology

Validation of a high temperature shape memory alloy for space applications

M. Collado, N. Nava, C. Rivera - Arquimea Ingeniería, SL

I. López-Ferreño, J. San Juan - Dpto. Física de la Materia Condensada, Univ. del País Vasco

Nanocrystalline glass-ceramic scintillators

D. de Faoite, O. Roberts, L. Hanlon, A. Ulyanov, S. McBreen, K. Stanton - UCD School of Mechanical and Materials Engineering, Univ. College Dublin

Design of microstructure and functional material properties by using rapid hot pressing/rapid sinter pressing

E. Neubauer, M. Kitzmantel, G. Kladler - RHP-Technology GmbH

Spray aerogel for launch vehicle cryogenic tanks

F. Conceição, M. Ochoa, R. Patricio - Active Aerogels

C. Semprimoschnig - ESA-ESTEC

Supplementary power harvesting for spacecrafts on flight using carbonaceous compound considering space environment

D.W. Kim - Seoul National University

J.P. Kim - Pusan National University / D.C. Shin - Koje Colledge / T.G. Kim - Pusan National University / Y.H. Kim - Seoul National University

Advanced aluminium based material for cryo-reservoir applications

V. Liedtke, M. Scheerer, G. Mozdzen, N. Stelzer - Aerospace & Advanced Composites GmbH

G. Atxaga, C. Jimenez – TECNALIA / A. Norman - ESA/ESTEC / B. Arregi – TECNALIA

Proton radiation damage on flexible, low-voltage organic thin-film transistors

B. Fraboni, A. Basile, L. Basirico, T. Cramer – Dpt. of Physics and Astronomy – Univ. of Bologna

P. Cosseddu, A. Bonfiglio – Dpt. of Electrical and Electronic Engineering – Univ. of Cagliari

S. Gerardin, M. Bagatin, A. Paccagnella – Dpt. of Information Engineering, Univ. of Padova

Thermally induced dynamics of solar panels with variable stiffness composite reinforced with curvilinear fibers

S.M. Hamza-Cherif - Dpt. of Mechanical Eng., Faculty of Technology, Univ. of Tlemcen

High mobility oxide semiconductors for light-weight, large-area electronics in radiation harsh environments

T. Cramer, A. Sacchetti - Università di Bologna

M.T. Lobato, A. Rovisco, J. Martins, P. Barquinha, E. Fortunato, R. Martins - Universidade Nova de Lisboa / B. Fraboni - Università di Bologna

Demonstration and challenges for joining technology based on direct bonding usable for construction of (large) structures in space

H. Fischer, E. Gelinck - TNO

C. Semprimoschnig - ESA/ESTEC / M. van Munster, J. van der Heijden – XYCARB

8:30 – 10:10	Session 9: STANDARDS, REGULATIONS Chairpersons: N. Baba, T. Rohr
8:30 – 8:50	Chinese standard test method for spacecraft thermal control coatings W. Feng Beijing Institute of Spacecraft Environment Engineering
8:50 – 9:10	Development policy and introduction of ISO16378 “Measurements of thermo-optical properties” N. Baba - JAMSS Y. Kimoto - JAXA
9:10 – 9:30	Environmental impact risk analysis, induced by spacecraft elements surviving an atmospheric re-entry H. Combes, E. Laurent, C. Durin, C. Cazaux - CNES
9:30 – 9:50	A method to customise qualification of substitutes in case of materials or processes obsolescence M. Chevalier - AIRBUS DS H. Jochem - T.A.S. E. Laurent, H. Combes - CNES C. Puig - AIRBUS DS
9:50 – 10:10	Impact of REACH legislation on European space programmes T. Rohr - ESA Members of the Materials & Processes Technology Board
10:10 – 10:30	MATREX - Material Recording Experience: CNES materials database for space applications H. Combes - CNES V. CochetEAU - ALTEN C. Durin - CNES
10:30 – 10:50	COFFEE BREAK
10:50 – 12:50	Session 10: AO – LEO – REENTRY Chairpersons: E. Grossman, T. Minton
10:50 – 11:10	Pyrolysis of Phenolic Impregnated Carbon Ablator (PICA) T. Minton, B. Bessire, S. Lahankar - Montana State University
11:10 – 11:30	Hybrid ablative/ceramic thermal protection system: mission, materials selection, interface development and verification approach J. Barcena, S. Florez, B. Perez - Tecnalía Research and Innovation G. Pinaud, J.M. Bouilly, W. P.P. Fischer - Airbus Defence & Space A. de Montbrun - Lièges HPK SA C. Zuber, W. Rotaermel, H. Hald - DLR C. Pereira - HPS K. Mergia, K. Triantou, G. Vekinis - N.C.S.R. "Demokritos" C. Ban, A. Stefan - INCAS V. Leroy, D. Bernard - ICMCB-CNRS B. Massuti, G. Herdrich - IRS – University of Stuttgart
11:30 – 11:50	Oxidation of carbon at high temperatures representative of a re-entry environment T. Minton, V. Murray, P. Woodburn, B. Marshall - Montana State University
11:50 – 12:10	Effect of high-energy inert gas collisions on the atomic oxygen-induced polymer erosion M. Tagawa, K. Ide, Y. Yamasaki, D. Watanabe, K. Yokota, A. Hatsuda - Kobe University
12:10 – 12:30	Simulation of atomic oxygen behavior using the NC-DSMC method in the Combined Space Effects Test Facility Y. Kimoto - JAXA T. Shimabukuro, M. Sakai, T. Koizumi - SED
12:30 – 12:50	Short poster introductions: AO-LEO-Reentry, standards , flight exper.
12:50 – 14:20	LUNCH

14:20 – 16:20	Session 11: NEW M&P (2) Chairpersons: J. Kleiman, S. Remaury
14:20 – 14:40	Liquid phase deposition of space durable antistatic tin oxide coating on polyimide I. Gouzman - Soreq NR K. Gotlib-Vainstein – Dpt. of Chemistry and Inst. for Nanotechnology and Advanced Materials, Bar-Ilan Univ. O. Gershevitz – Inst. for Nanotechnology and Advanced Materials, Bar-Ilan Univ. A. Bolker, N. Atar, E. Grossman - Soreq NRC C. Sukenik - Dpt. of Chemistry and Inst. for Nanotechnology and Advanced Materials, Bar-Ilan Univ.
14:40 – 15:00	A high-temperature conductive white thermal control surface for the Solar Orbiter K. Doherty - University College Dublin B. Twomey, S. McGlynn - Enbio A. Norman - ESA T. McCaul - Airbus C. Semprimoschnig, B. Bras, P. Olivier - ESA K. Stanton - University College Dublin T. Raftery - Enbio
15:00 – 15:20	White inorganic plasma electrolytic oxidation coating for spacecrafts S. Shrestha - Keronite International Ltd C. Borrero del Pino - Airbus DS GmbH U. Malayoglu - Dokuz Eylul University
15:20 – 15:40	Development of silicone adhesives with thermal and electrical properties G. Sierra, S. Gomes, O. Guillaumon - MAP S. Remaury, P. Nabarra - CNES
15:40 – 16:00	Particulate Cleanliness and Cleaning Validation for Space Applications U. Gommel, G. Kreck, Y. Holzappel - Fraunhofer Institute for Manufacturing Engineering and Automation IPA
16:00 – 16:20	Short poster introductions: extreme environments
16:20 – 16:40	COFFEE BREAK

16:40 POSTER SESSION 3

EXTREME ENVIRONMENTS

A new satellite system-level m/od impact risk assessment tool

C. Théroude, G. Chantepedrix - Airbus Defence and Space
A. Merle - Atos

Behavior of high pressure vessels under an hypervelocity impact

P.L. Hereil, J. Mespoulet, F. Plassard - THIOT INGENIERIE

Challenges in designing dust particle sources for simulated planetary environmental testing

J. Kleiman, S. Horodetsky, V. Issoufov - Integrity Testing Laboratory Inc.

High temperature material assessment and approval

F. Panin - ESA
A. Leupolz - Airbus Defence and Space GmbH

Acktar magic black coating for the challenging environmental conditions of METIS

L. Montemurro, F. Zanetti - CGS
A. Simone, T. Schillaci - TAS-I / M. Castronuovo – ASI / D. Katsir, K. Shabtai - Acktar Ltd.

Plasma sprayed UHTC coatings for rocket throat carbon based materials

R. Marocco – AVIO / M. Tului, I. Moretti - Centro Sviluppo Materiali

Thermo-structural modelling of a plasma discharge tube for the variable specific impulse magnetoplasma rocket

D. de Faoite, D. Browne - UCD School of Mechanical and Materials Eng., Univ. College Dublin
J.I. Del Valle Gamboa - Ad Astra Rocket Company / K. Stanton - UCD School of Mechanical and Materials Eng., Univ. College Dublin

AO - LEO – REENTRY

Resistack: a new detector for atomic oxygen

S. Duzellier, S. Soonckindt, J.P. Chardon - ONERA

E. Laurent – CNES

Collision-induced oxidation of Si atoms embedded in carbon-based materials

M. Tagawa, D. Watanabe, Y. Furuyama - Kobe University

K. Kanda - The University of Hyogo / A. Yoshigoe, Y. Teraoka - Japan Atomic Energy Agency / K. Matsumoto – JAXA

Laser-detonation beam facilities for sub-LEO material erosion studies

K. Yokota, K. Ide, Y. Yamasaki, A. Hatsuda, M. Tagawa - Kobe University

Investigation of atomic oxygen and hypervelocity impact on polymer-based nanocomposites

L. Novikov, E. Voronina, V. Chernik, I. Ermolaev - Lomonosov Moscow State Univ

K. Vernigorov, M. Yablokova, K. Yakovlev - Lomonosov Moscow State University

ATOX erosion of polymers: some results and comparison of in-orbit data and on-ground data.

E. Laurent, J.M. Desmarres – CNES

Application of the results obtained in the LEO environment for prediction of the material behavior in future missions exploring Moon and outer space: a critical view.

A. Milinchuk, V. Feldman - Lomonosov Moscow State University

High absorptance coatings for GHGSAT nanosatellite

V. Latendresse, J. Lavoie, R. V. Kruzelecky, W. Jamroz - MPB Communications

J. McKeever - GHGSat Inc. / V. Isbrucker - Isbrucker Consulting Inc. / D. Katsir, K. Shabtain – Acktar Ltd.

STANDARDS

Innovative thermal management concepts and material solutions for future space vehicles

J. Barcena, C. Jimenez - Tecnalía

B. Esser, A. Gülhan, M. Kuhn, I. Petkov, V. Hannemann – DLR / A. Okan, S. Ontac – TÜBITAK / J. Merrifield - Fluid Gravity Engineering / S. Gianella - Erbicola SA / A. Ortona, M. Barbato, L. Ferarri - ICIMSI-SUPSI / V. Liedtke- Advanced Aerospace Composites / D. Francesconi, D. Santella, M. Portaluppi - Thales Alenia Space / T. Hideyuki - JAXA

FLIGHT EXPERIMENTS

Device for measuring the micro-meteoroid environment in near-Earth space

A. Telegin, N. Semkin - SSAU

L. Novikov - MSU SINP

8:30 – 10:10	Session 12: CONTAMINATION (3) Chairpersons: Y. Goueffon, R. Rampini
8:30 – 8:50	In-situ optical characterization of outgassed compounds R. Martins, B. Bras, G. Milassin, R. Rampini – ESA-ESTEC
8:50 – 9:10	Development of new apparatus to measure the optical properties of deposited molecular contaminants within the Ultraviolet to Near-Infrared range Y. Miura, E. Miyazaki, K. Shimazaki, R. Yamanaki, O. Numata, Y. Kimoto, K. Suzuki - JAXA
9:10 – 9:30	Evaluation of QCM thermogravimetric analysis (QTGA) data for re-emission modeling S. Baba - Advanced Engineering Services Co., Ltd. E. Miyazaki, Y. Miura, O. Numata - JAXA T. Kikuchi - Advanced Engineering Services Co., Ltd., Y. Kimoto - JAXA N. Otsuka - Advanced Engineering Services Co., Ltd.
9:30 – 9:50	Simulation of outgassing test by vacuum TGA S. Solé, O. Guillaumon - MAP
9:50 – 10:10	In situ real time quantitative and qualitative monitoring of molecular contamination by coupling TGA and RGA: recent advances and development of a numerical tool for data analysis E. Vanhove, J.F. Roussel - ONERA D. Faye, P. Guigue - CNES
10:10 – 10:30	COFFEE BREAK
10:30 – 12:30	Session 13: FLIGHT EXPERIMENTS Chairpersons: R. Briet, Y. Kimoto
10:30 – 10:50	New concept of the THERME experiment for thermal coatings ageing measurement in LEO and GEO S. Rémaury, S. d'Escrivan, P. Nabarra - CNES
10:50 – 11:10	IST (in-flight experiment with space materials using THERME): in-orbit experimental result over 30 months K. Fujihira, E. Miyazaki - JAXA S. Rémaury - CNES Y. Nakamura, T. Miyakita, R. Hatakenaka, Y. Kimoto - JAXA P. Nabarra, S. d'Escrivan - CNES
11:10 – 11:30	Ageing of thermal coatings on LEO sun-synchronous orbits: in-flight measurements and modelling E. Vanhove, J.F. Roussel - ONERA S. Rémaury, D. Faye, P. Guigue - CNES
11:30 – 11:50	Micromechanical testing of Teflon® Fluorinated Ethylene Propylene (FEP) retrieved from Hubble Space Telescope (HST) G. Milassin - Erich Schmid Inst. of Materials Science of the Austrian Acad. of Sciences & ESA S. Wurster - Erich Schmid Inst. of Materials Science of the Austrian Acad. of Sciences C. Semprimoschnig - ESA R. Pippin - Erich Schmid Institute of Materials Science of the Austrian Acad. of Sciences
11:50 – 12:10	Space debris experiment SODAD on SAC-D: analysis of in flight data C. Durin - CNES J.C. Mandeville - Mandespace
12:10 – 12:20	Conclusions and closure
12:20 – 13:45	LUNCH