Fifth International Microgravity Combustion Workshop

Workshop Check-In and Late Registration: Monday, May 17th, 5:00-7:00 pm, and Tuesday, May 18th, beginning 7:00 am

Tuesday, May 18th

8:00	Plenary - Chair: D. Urban "Welcoming Remarks" Don Campbell, Jack Salzman, Simon Ostrach	
8:30	Keynote Address: Dr. Kathryn Clark, ISS Senior Scientist, NASA Headquarters, "International Space Station"	
9:15	Dr. Merrill King, Prof. Chung K. Law "Microgravity Combustion Science"	
9:45	Break	
	Flammability/ Extinction Chair: T. Kashiwagi Ballroom East	Laminar Flames Chair: P. Sunderland Ballroom West
10:00	1 T'ien, James S.	10 Ronney, Paul D.
10:25	2 Dryer, Fred L.	11 Miller, Fletcher J.
10:50	3 Egolfopoulos, Fokion N.	12 Faeth, Gerard M.
11:15	4 Altenkirch, Robert A.	13 Abbud-Madrid, Angel
11:40	5 Nayagam, Vedha	14 Kawakami, Tadashige
12:05	Lunch	
	Flammability/ Extinction Chair: R. Friedman Ballroom East	Particle Clouds/ Dusts Chair: TBD Ballroom West
1:15	6 Fernandez-Pello, A. Carlos	15 Egolfopoulos, Fokion N.
1:40	7 Sanchez-Tarifa, Carlos	16 Jarosinski, Jozef
2:05	8 Atreya, Arvind	17 Lee, John H.S.
2:30	9 Ivanov, Anatoliy	18 Gokalp, Iskender
2:55	Break	
	Combustion Synthesis and Soot Chair: R. VanderWal Ballroom East	Flame Stability Chair: M. Smooke Ballroom West
3:15	19 Faeth, Gerard M.	25 Buckmaster, John
3:40	20 Howard, Jack B.	26 Wichman, Indrek S.
4:05	21 Axelbaum, Richard L.	27 Matalon, Moshe
4:30	22 Moore, John J.	28 Margolis, Stephen B.
4:55	23 Matkowsky, Bernard J.	29 Pearlman, Howard
5:20	24 Sytschev, Alexander Evgen'evich	30 Kailasanath, Kazhikathra
6:00	Social Hour/Cash Bar, until 7:30	

Wednesday, May 19th

8:00	Plenary - Chair: K. Sacksteder Dr. David Kaplan, Office of Exploration, Johnson Space Center, "Mars Reference Mission"	
9:15	Break	
	Laminar Flames Chair: S. Gokoglu Ballroom East	Combustion Diagnostics Chair: P. Greenberg Ballroom West
9:30	31 Law, Chung K.	41 Silver, Joel A.
9:55	32 Fendell, Frank	42 Koenig, Jens
10:20	33 Dietrich, Daniel	43 Fernandez-Pello, A. Carlos
10:45	34 Sohrab, Siavash H.	44 Kane, Daniel J.
11:10	38 Joulain, Pierre	45 Massoli, Patrizio
11:35	36 Butler, Kathryn M.	46 Misra, Prabhakar
12:00	Lunch	
	Laminar Flames Chair: D. Stocker Ballroom East	Metals Combustion Chair: J. Howard Dolder-Hassler Room
1:15	37 Chen, Lea Der	47 Branch, Melvyn C.
1:40	35 Torero, Jose L.	48 Dreizin, Edward L.
2:05	39 Long, Marshall B.	49 Meinkoehn, Dirk
2:30	40 Agrawal, Ajay K.	50 Assovskiy, Igor G.
2:55	Break	
3:15	Poster Session, until 5:30 Ballroom West Papers 81 - 120 Flammability and Extinction, Combustion Diagnostics, Propellants and Rockets, Combustion Synthesis, Laminar Diffusion Flames, Turbulent Flames, Droplet Combustion, Soot Processes, Heterogeneous Diffusion Flames, Body Force Effects on Flames	
6:15	Shuttle Buses between Sheraton and Great Lakes Science Center - Service Begins	
6:30	Reception, IMAX Movie and Dinner at the Great Lakes Science Center - Speaker: Dr. Shannon Lucid, Shuttle/Mir Astronaut	

Thursday, May 20th

8:00	Plenary - Chair: H. Ross "Space Station Utilisation Initiatives of the European Space Agency ESA/ESTEC" Ewald Kufner (ESA)	
8:30	"NASA Research Announcement & Space Station Plans" Dr. Merrill King, Dr. David Urban, Dr. Karen Weiland (NASA)	
9:15	Break	
	Droplet and Particle Combustion Chair: R. Santoro Ballroom East	Turbulent Combustion Chair: Z. Yuan Dolder-Hassler Room
9:30	51 Williams, Forman A.	57 Bahadori, M. Yousef
9:55	52 Chelliah, Harsha K.	58 Hegde, Uday
10:20	53 Shaw, Benjamin D.	59 Cheng, Robert K.
10:45	54 Choi, Mun Young	60 Driscoll, James F.
11:10	55 Avedisian, C. Thomas	61 Dahm, Werner J. A.
11:35	56 Tanabe, Mitsuaki	62 Elghobashi, Said
12:00	Lunch Speaker: Dr. Norman Thagard, Shuttle/Mir Astronaut, Ret.	
	Flame Spread Chair: P. Ferkul Ballroom East	Sprays and Droplet Arrays Chair: K. Weiland Dolder-Hassler Room
1:30	71 Altenkirch, Robert A.	63 Dietrich, Daniel L.
1:55	72 Ross, Howard D.	64 Ruff, Gary A.
2:20	73 Sirignano, William A.	65 Nomura, Hiroshi
2:45	74 Tashtoush, Ghassan	66 Yoshizaki, Takuo
3:10	Break	
	Flame Spread Chair: S. Olson Ballroom East	High Pressure Combustion Chair: J. Sung Dolder-Hassler Room
3:30	75 Kashiwagi, Takashi	67 Williams, Forman A.
3:55	76 Ronney, Paul D.	68 Kadota, Toshikazu
4:20	77 Fujita, Osamu	69 Kobayashi, Hideaki
4:45	78 Nagata, Harunori	70 Gokalp, Iskender

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1	T'ien, James S.	"Solid Inflammability Boundary at Low Speed (SIBAL)"
2	Dryer, Fred L.	"Some Recent Observations on the Burning of Isolated N-Heptane and Alcohol Droplets"
3	Egolfopoulos, Fokion N.	"Dynamics and Structure of Weakly-Strained Flames In Normal- and Micro-gravity"
4	Altenkirch, Robert A.	"Reflight of the Solid Surface Combustion Experiment:Flame Radiation Near Extinction"
5	Nayagam, Vedha	"Edge-Flames in von Karman Swirling Flows"
6	Fernandez-Pello, A. Carlos	"Flow Effects on the Flammability Diagrams of Solid Fuels: Microgravity Influence on Ignition Delay"
7	Sanchez-Tarifa, Carlos	"Combustion and Flammability Characteristics of Solids at Microgravity in Very Small Velocity Flows"
8	Atreya, Arvind	"Radiant Extinction of Gaseous Diffusion Flames"
9	Ivanov, Anatoliy	"Preliminary Results Of The Third Test Series Of Nonmetal Material Flammability Evaluation In SKOROST Apparatus On The Space Station Mir"
10	Ronney, Paul D.	"Studies of Premixed Laminar and Turbulent Flames at Microgravity"
11	Miller, Fletcher J.	"Gravitational Influences on Flame Propagation Through Non-Uniform Premixed Gas Systems"
12	Faeth, Gerard M.	"Soot Formation in Laminar Premixed Flames"
13	Abbud-Madrid, Angel	"A Study of Flame Propagation on Water-Mist Laden Gas Mixtures in Microgravity"
14	Kawakami, Tadashige	"Flame Investigation of Very Lean Propane-air Mixtures under Microgravity"
15	Egolfopoulos, Fokion N.	"Detailed Studies on the Structure and Dynamics of Reacting Dusty Flows at Normal and Microgravity
16	Jarosinski, Jozef	"Combustion Mechanism of Dust Clouds in Microgravity"
17	Lee, John H.S.	"Laminar Dust Flames: A Program of Microgravity and Ground-based Studies at McGill"
18	Gokalp, Iskender	"Prelminary Analysis of a High Pressure Spray and Cloud Combustion Module for the ISS"
19	Faeth, Gerard M.	"Laminar Soot Processes"
20	Howard, Jack B.	"Synthesis of Fullerenes in Low Pressure Benzene/Oxygen Diffusion Flames"
21	Axelbaum, Richard L.	"Monte Carlo Simulation of Nanoparticle Encapsulation in Flames"
22	Moore, John J.	"Combustion Synthesis of Advanced Porous Materials in Microgravity Environment"
23	Matkowsky, Bernard J.	"Filtration Combustion in Smoldering and SHS"
24	Sytschev, Alexander Evgen'evich	"Gasless SHS in Particle Clouds under Microgravity: Experiments aboard the MIR Space Station"
25	Buckmaster, John	"A theory of oscillating edge flames"
26	Wichman, Indrek S.	"Investigation of Diffusion Flame Tip Thermodiffusive and Hydrodynamic Instability Under Microgravity Conditions"
27	Matalon, Moshe	"Diffusion Flames: Extinction and Stability"
28	Margolis, Stephen B.	"Hydrodynamic Instability and Thermal Coupling in a Dynamic Model of Liquid-Propellant Combustion"
29	Pearlman, Howard	"Low-Temperature Oxidation Reactions and Cool Flames at Earth and Reduced Gravity"
30	Kailasanath, Kazhikathra	"Detailed Multidimensional Simulations of the Structure and Dynamics of Flames"

31	Law, Chung K.	"Structure and Transient Response of Spherical Flames"
32	Fendell, Frank	"Planar Strain-Rate-Free Diffusion Flames: Initiation Properties and Extinction"
33	Dietrich, Daniel	"Candle Flames in Microgravity"
34	Sohrab, Siavash H.	"Hydrodynamics of Spherical Flows and Geometry of Premixed Flames near the Stagnation Point of Axisymmetric Viscous Counterflows"
35	Torero, Jose L.	"Experimental Observations On a Low Strain Counter-Flow Diffusion Flame:Flow and Buoyancy Effects"
36	Butler, Kathryn M.	"Bursting Bubbles from Combustion of Thermoplastic Materials in Microgravity"
37	Chen, Lea Der	"Influence of Buoyant Convection on the Stability of Enclosed Laminar Flames"
38	Joulain, Pierre	"Laminar Diffusion Flames in Micro-Gravity: Experimental Results Leading to Mini-Texus-6"
39	Long, Marshall B.	"The Effects of Buoyancy and Dilution on the Structure and Lift-Off of Coflow Laminar Diffusion Flames"
40	Agrawal, Ajay K.	"Effects of Buoyancy in Hydrogen Jet Diffusion Flames"
41	Silver, Joel A.	"Quantitative Species Measurements in Microgravity Combustion Flames Using Near-infrared Diode Lasers"
42	Koenig, Jens	"Formaldehyde-PLIF Detection of Cool-Flame Reactions during Two-Stage Ignition of Alkane Droplets"
43	Fernandez-Pello, A. Carlos	"Observations from the Microgravity Smoldering Combustion (MSC) Ultrasound Imaging System (UIS)"
44	Kane, Daniel J.	"Real Time Quantitative 3-D Imaging of Diffusion Flame Species"
45	Massoli, Patrizio	"Optical Diagnostic of Droplets in Microgravity"
46	Misra, Prabhakar	"Laser Optogalvanic Spectroscopy of Neon and Argon in a Discharge Plasma and its Significance for Microgravity Combustion"
47	Branch, Melvyn C.	"Combustion of Metals in Reduced-Gravity and Extraterrestrial Environments"
48	Dreizin, Edward L.	"Combustion of Aerosolized Metal Particles in Microgravity"
49	Meinkoehn, Dirk	"Oxide Layer Effects in Metal Particle Combustion"
50	Assovskiy, Igor G.	"Gravity Effect in Aluminum Droplet Ignition and Combustion"
51	Williams, Forman A.	"Flame Histories in Heptane Droplet Combustion"
52	Chelliah, Harsha K.	"Heterogeneous Combustion of Porous Graphite Particles in Normal and Microgravity"
53	Shaw, Benjamin D.	"Combustion of Two-Component Miscible Droplets in Reduced Gravity"
54	Choi, Mun Young	"Experiments and Model Development for the Investigation of Sooting and Radiation Effects in Microgravity Droplet Combustion"
55	Avedisian, C. Thomas	"Experimental Study of Nonane and Nonane/Hexanol Fuel Droplet Combustion in Microgravity"
56	Tanabe, Mitsuaki	"Influence of Acoustic Field on Droplet Combustion in Microgravity"
57	Bahadori, M. Yousef	"Vortex/Flame Interactions in Microgravity Pulsed Jet Diffusion Flames"
58	Hegde, Uday	"Characteristics of Non-Premixed Turbulent Flames in Microgravity"
59	Cheng, Robert K.	"Effects of Buoyancy on the Flowfields of Lean Premixed Turbulent V-Flames"
60	Driscoll, James F.	"Flame-Vortex Interactions in Microgravity to Improve Models of Turbulent Combustion"

61	Dahm, Werner J. A.	"The Interaction of a Vortex Ring with a Diffusion Flame under Microgravity Conditions"
62	Elghobashi, Said	"Effects of Gravity on Sheared Turbulent Nonpremixed Flames"
63	Dietrich, Daniel L.	"Combustion of Interacting Droplet Arrays in a Microgravity Environment"
64	Ruff, Gary A.	"Formation and Levitation of Unconfined Droplet Clusters"
65	Nomura, Hiroshi	"Microgravity Experiments on Combustion of Monodispersed and Mono-Sized Fuel Droplet Clouds"
66	Yoshizaki, Takuo	"Flame Propagation of Spray Compound Mixture in a Constant Volume Vessel"
67	Williams, Forman A.	"Pressure Effects on Combustion of Methanol and Methanol-Docecanol Droplets"
68	Kadota, Toshikazu	"Autoignition of a Fuel Droplet in Supercritical Gaseous Environments Under Microgravity in a Drop Shaft"
69	Kobayashi, Hideaki	"Microgravity Experiment on Flame Spread of a Fuel Droplet Array in a High-Pressure Environment"
70	Gokalp, Iskender	"Effects of Gravitational Acceleration on High Pressure Combustion of Methanol Droplets"
71	Altenkirch, Robert A.	"Diffusive and Radiative Transport in Fires (DARTFire): Opposed-Flow Flame Spread in Low-Velocity Flows"
72	Ross, Howard D.	"Flame Spread Across Liquids - Experimental Results"
73	Sirignano, William A.	"Flame Spread Across Liquids: Numerical Modelling"
74	Tashtoush, Ghassan	"The Three-D Flow Structures of Gas and Liquid Generated by a Spreading Flame over Liquid Fuel"
75	Kashiwagi, Takashi	"Ignition Transition Flame Spread in Multidimensional Configurations in Microgravity"
76	Ronney, Paul D.	"Transport and Chemical Effects on Concurrent and Opposed-Flow Flame Spread at Microgravity"
77	Fujita, Osamu	"Observation of Flame Spread along Solid Fuel Particle Array in Microgravity: Effect of Surrounding Gas Condition"
78	Nagata, Harunori	"Combustion of 2-Dimensionally Arranged Fuel Samples under Microgravity Conditions"
79	King, Merrill K.	"NASA Microgravity Combustion Science Program"
80	Kufner, Ewald	"Space Station Utilisation Initiatives of the European Space Agency ESA/ESTEC"
81	Ferkul, Paul V.	"Thickness Effects on Fuel Flammability"
82	Hamins, Anthony	"The Extinction of Low Strain Rate Diffusion Flames by a Suppressant"
83	Melechov	"The Study Of Polymer Material Combustion In Simulated Microgravity By Physical Modeling Method"
84	Tariq Shamim	"Effect of Lewis Number on Radiative Extinction and Flamelet Modeling"
85	Jeffries, Jay B.	"Quantitative Interpretation of Optical Emission Sensors for Microgravity Experiments"
86	Kisholoy, Goswami	"Detecting the Onset of Fire in an Aircraft by Employing Correlation Spectroscopy"
87	Buerki, Peter R.	"Microgravity Tested 38 W CO2 Laser Reactor Prototype for the Gas-Phase Synthesis of Refractory Materials"
88	Peterson, Kris	"A Compact Tunable Near-UV Source for Quantitative Microgravity Combustion Diagnostics"
89	Rawlins, W. Terry	"Hyperspectral Imaging of Flame Spread Over Solid Fuel Surfaces Using Adaptive Fabry-Perot Filters"
90	Sunderland, Peter	"Particle-Image Velocimetry in Microgravity Laminar Jet Diffusion Flames"

91	Varghese, Philip	"Diode Laser Velocity Measurements by Modulated Filtered Rayleigh Scattering"
92	Rice, Eric E.	"Initial Test Firing Results for Solid CO/GOX Cryogenic Hybrid Rocket Engine for Mars ISRU Propulsion Applications"
93	Shaw, Benjamin D.	"Combustion of Han-Based Monopropellant Droplets in Reduced Gravity"
94	Smooke, Mitchell D.	"Computational and Experimental Study of Energetic Materials in a Counterflow Microgravity Environment"
95	Alford, John M.	"Formation of Carbon Nanotubes in a Microgravity Environment"
96	Vander Wal, Randall L.	"Synthesis of graphite encapsulated metal nanoparticles and metal catalyzed nanotubes"
97	Varma, Arvind	"The Effects of Gravity on Combustion and Structure Formation during Synthesis of Advanced Materials"
98	Chen, Jyh-Yuan	"Numerical Study of Buoyancy and Differential Diffusion Effects on the Structure and Dynamics of Triple Flames"
99	Gupta, Ashwani K.	"Studies on the Behavior of Highly Preheated Air Flames in Microgravity"
100	Law, Chung K.	"Near Limit High-Pressure Spherical Flame Propagation in Microgravity"
101	Puri, Ishwar K.	"Gravity Effects on Partially Premixed Flames"
102	Takahashi, Fumiaki	"Reaction Kernel Structure and Diffusion Flame Stabilization"
103	Clemens, Noel T.	"Investigation of Strain / Vorticity and Large-Scale Flow Structure in Turbulent Nonpremixed Jet Flames"
104	Givi, Peyman	"Large Eddy Simulation of Gravitational Effects on Transitional and Turbulent Gas-Jet Diffusion Flames"
105	Hermanson, James C.	"An Experimental Investigation of Fully-Modulated Turbulent Diffusion Flames in Reduced Gravity"
106	Nayagam, Vedha	"Dynamics of Droplet Extinction in Slow Convective Flows"
107	Rosner, Daniel E.	"Combustion of Indiviual Bubbles and Submerged Gas Jets in Liquid Fuels"
108	Smith, Owen I.	"Acoustically Forced Condensed Phase Fuel Combustion under Microgravity Conditions"
109	Axelbaum Richard L.	"Effects of Structure and Hydrodynamics on the Sooting Behavior of Spherical Microgravity Diffusion Flames"
110	Blevins, Linda G.	"Carbon Monoxide and Soot Formation in Inverse Diffusion Flames"
111	Faeth, Gerard M.	"Flow/Soot-Formation Interactions in Nonbuoyant Laminar Diffusion Flames"
112	Kennedy, Ian M.	"The Impact Of Buoyancy And Flame Structure On Soot"
113	Mulholland, George	"Kinetics and Structure of Superagglomerates Produced by Silane and Acetylene"
114	Dreizin, Edward L.	"Internal Heterogeneous Processes in Aluminum Combustion"
115	Goldmeer, Jeffrey S.	"Interferometer Development for Study of Interactions between Flames on Parallel Solid Surfaces"
116	Olson, Sandra L.	"Low Stretch Diffusion Flames over a Solid Fuel"
117	Zhang, Xiaoqian	"A Study of Candle Flame in Microgravity"
118	Dunn-Rankin, Derek	"Electrical Aspects of Flames in Microgravity Combustion"
119	Mell, William E.	"Simulation of Combustion Systems with Realistic g-jitter"
120	Sacksteder, Kurt R.	"Flame Spreading and Extinction in Partial Gravity Environments"