



Eastern States Section of the Combustion Institute Spring 2024 Conference

03/11/2024-03/13/2024



Department of Chemistry
Franklin College of Arts and Sciences
UNIVERSITY OF GEORGIA



College of Engineering
UNIVERSITY OF GEORGIA

Industry Panel

MONDAY 03/11/2024 7:30 PM

For the first time, the ESSCI meeting convenes an industry panel event showcasing major companies that are important to the field of combustion. The event provides an opportunity for conference attendees to engage with leading industry researchers on topics directly related to combustion science and engineering. The format involves panelists discussing issues relevant to their companies and to themes of the meeting, such as energy sustainability, emissions mitigation, data science, and industrial decarbonization, followed by a question-and-answer session that is open to the audience.

Banquet

TUESDAY 3/12/2024 6:30 PM

The ESSCI conference banquet is being held at the State Botanical Gardens of Georgia in the Great Room. As a unit of Public Service and Outreach at the University of Georgia, the State Botanical Garden of Georgia creates and nurtures an environment for learning, inspiration and engagement through horticulture, conservation, science-based programs and lasting partnerships. The State Botanical Garden's tropical collection surrounds the Great Room year-round and with high glass ceilings and exotic greenery, the setting becomes more spectacular after sunset.

Sponsors



GTI ENERGY

solutions that transform

Ansys



College of Engineering
UNIVERSITY OF GEORGIA



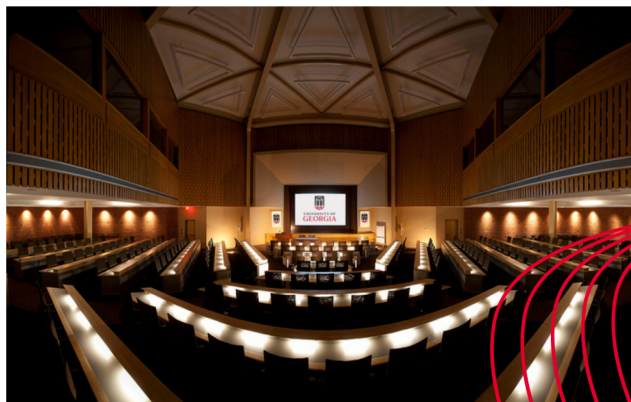
Honeywell

ORAU



Department of Chemistry
Franklin College of Arts and Sciences
UNIVERSITY OF GEORGIA

Masters Hall



Agenda



Monday, March 11

Plenary I Professor Tim Lieuwen, Georgia Tech

- location: Masters Hall

Mentor-Mentee Workshop with Catered Lunch, 11:50 A-1:00 P

- location: Magnolia Ballroom, Salon 3

Catered Lunch for All Other Conference Participants, 11:50 A-1:00 P

- location: Magnolia Ballroom, Salons 4&5

General Member Meeting and Awards Presentation, 1:00-1:50 P

- location: Masters Hall

Industry Engagement Panel Session and Dinner, 6:45-9:00 P dinner

- location: Magnolia Ballroom, Salons 1&2, 6:45-7:30 P dinner tickets and drink tickets (red) inside of badge/lanyard
- panel session location: Masters Hall, 7:30-9:00 P

Tuesday, March 12

Plenary II Professor Jillian Goldfarb, Cornell University

- location: Masters Hall

7th Glassman Lecture Professor Sili Deng, MIT

- location: Masters Hall

Catered Lunch for All Other Conference Participants, 11:50 A-1:00 P

- location: Magnolia Ballroom, Salons 3,4&5

Banquet at the State Botanical Gardens of Georgia, Conservatory Room
two buses departing Georgia Center at 6:00 P departure from banquet
to Georgia Center at 9:15 P Dinner tickets and drink tickets (green)
inside of badge/lanyard

Wednesday, March 13

Plenary III Dr. Sibendu Som, Argonne National Laboratory

- location: Masters Hall

Conference Adjourns at 11:50 A

GTI Energy is dedicated to advancing the economy-wide transformation needed to deeply decarbonize energy systems while supplying the energy needed to support rising living standards and economic growth worldwide. Since 1941, GTI Energy has contributed to strengthening energy systems and the communities they serve. As a leading nonprofit research, development, and demonstration organization, we are focused on developing, scaling, and deploying energy transition solutions that improve lives, economies, and the environment. GTI Energy leverages the expertise of our trusted team of scientists, engineers, and partners to deliver impactful innovations needed for low-carbon, low-cost energy systems worldwide. the expertise of our trusted team of scientists, engineers, and partners to deliver impactful innovations needed for low-carbon, low-cost energy systems worldwide.



Dr. Alex Fridlyand

Speaker

Dr. Alex Fridlyand is a Senior Program Manager in the Heat & Power Group, part of the Low Carbon Energy Systems at GTI Energy. His expertise are combustion system design, reduced order system modeling, and computational fluid dynamics. At GTI Energy, Alex leads a research program focused on low-carbon fuels, consisting of over 30 projects in 2023 to develop and demonstrate the use of hydrogen in commercial and industrial applications. Additionally, he has fifteen years of experience in experimental and theoretical research in combustion, heat transfer, and thermodynamics. Alex received his B.S. from the University of Illinois at Urbana-Champaign and a Ph.D. from the University of Illinois at Chicago, both in Mechanical Engineering.

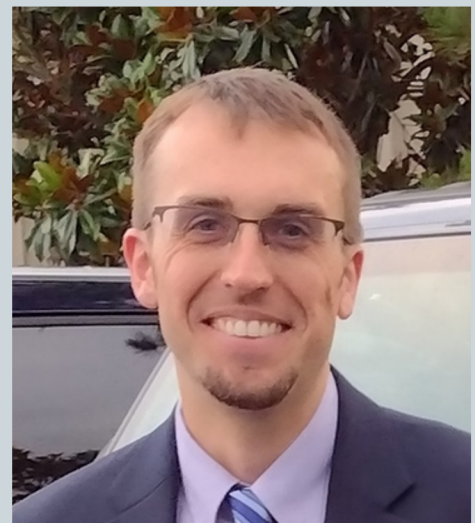


Industry Panelist

Honeywell Thermal Solutions (HTS) is a world leading manufacturer of burners for industrial heating. Applications for HTS burners are varied and extensive, ranging in everything from coffee roasting, gypsum board drying, cement clinker manufacture, and even turbine exhaust gas heating for heat recovery steam generators. In addition to the extensive burner offerings, HTS maintains a robust portfolio of burner control and safeguarding systems including the Honeywell 7800, Maxon Smart Link, Honeywell SLATE, and Krom-Schroder BCU.

Speaker

Dr. Wyatt Culler is a New Product Introduction Burner Development Engineer in Honeywell Thermal Solutions. His expertise is in burner design and industrial thermal system data analytics. Prior to joining Honeywell in 2018 Wyatt worked at the Penn State Reacting Flow Dynamics Lab, researching fuel staging as it pertained to power generation gas turbine engines. Wyatt received his B.S. from Wilkes University and a Ph.D. from Penn State, both in mechanical engineering.



Dr. Wyatt Culler

Ansys, a global leader in engineering simulation, has significantly advanced the field of combustion analysis through its comprehensive suite of software tools. Specializing in the complexities of fluid dynamics and chemical reactions, Ansys empowers engineers to design and optimize combustion systems for a variety of applications, including automotive engines, gas turbines, and industrial furnaces. Leveraging high-fidelity simulations, Ansys software enables the prediction of combustion performance, emission characteristics, and fuel efficiency, facilitating the development of cleaner, more efficient technologies. Through its commitment to innovation, Ansys continues to shape the future of combustion engineering, addressing the pressing demands for energy efficiency and environmental sustainability.

Speaker:

Stefano Orsino stands out in the engineering software industry, particularly at Ansys, for his groundbreaking work in the area of combustion simulation. His deep expertise in mechanical engineering has been pivotal in advancing Ansys's capabilities in modeling and analyzing complex combustion processes. Orsino's contributions have significantly enhanced the accuracy and efficiency of simulations that predict combustion behavior in various applications,

including automotive engines, industrial furnaces, and gas turbines, along with objectives including the prediction of hydrogen and emissions (CO, NOx, soot). Through his leadership, Ansys has developed sophisticated tools that help engineers optimize fuel efficiency, reduce emissions, and improve the overall performance of combustion systems. Orsino's innovative approaches and dedication to excellence have not only elevated Ansys's portfolio but have also made a lasting impact on the field of combustion engineering, leading to more sustainable and efficient energy solutions worldwide.



Stefano Orsino

Speakers

Plenary Lecture I: Monday, March 11, 2024



Professor Tim Lieuwen

Dr. Tim Lieuwen is the Regents' Professor, holder of the David S. Lewis, Jr. Chair, and the executive director of the Strategic Energy Institute at Georgia Tech. His interests lie in the areas of clean energy and propulsion systems, energy policy, acoustics, fluid mechanics, and combustion. He works closely with industry and government, focusing particularly on fundamental problems that arise from development of clean combustion systems or utilization of alternative fuels.

Dr. Lieuwen is a member of the National Academy of Engineering, a Foreign Fellow of the Indian National Academy of Engineering, and a Fellow of four major societies. Other national awards include the ASME Westinghouse Gold Medal and AIAA Lawrence Pendray Award. He serves on governing or advisory boards of 3 DOE national labs (ORNL, PNNL, and NREL). He has authored or edited four combustion books, including the textbook *Unsteady Combustor Physics*, and more than 400 other publications. He has also received five patents, all licensed to industry, and founded and serves as CTO of, TurbineLogic, an analytics firm working in the energy industry. He is a member of the National Petroleum Counsel and is editor-in-chief of an American Institute of Aeronautics and Astronautics book series.

Plenary Lecture II: Tuesday, March 12, 2024

Professor Jillian Goldfarb



Prof. Jillian Goldfarb received her B.S. in Chemical Engineering from Northeastern University in 2004 and Ph.D. from Brown University in 2008, and is now an Associate Professor in the Department of Chemical Engineering at Cornell University. Her research tackles issues surrounding energy generation and its impact on the environment. On campus, Prof. Goldfarb is a Fellow at the Atkinson Center for a Sustainable Future, the Cornell Institute of Politics and Global Affairs, the Cornell Dairy Center of Excellence, and an Expert in the Cornell Energy Systems Institute.

Prof. Goldfarb served as an Associate Principal Editor for the journal *Fuel*, led the Fall 2022 American Chemical Society Fall National Meeting Theme "Sustainability in a Changing World" and is a member of the ACS Committee on Environmental Improvement. By understanding how pollutants from energy generation impact the environment, and designing new processes to convert renewable sources to energy and materials that remove such pollutants, we can mitigate energy's impact on the environment while enabling widespread access to modern energy for all. On-going research projects include investigating the conversion of biomass to biofuels via pyrolysis and hydrothermal carbonization, fabricating sustainable materials for water treatment, and designing slow-release soil amendments from waste biomass. To complement these efforts, she and her collaborators explore various aspects of public understanding of science to better design public outreach campaigns to garner support for renewable energy policies and combat bias and hesitancy in trusting scientists. Her work appears in top journals such as *Energy Conversion and Management*, *Journal of Cleaner Production*, *New England Journal of Medicine*, *Energy Policy*, *Green Chemistry*, and beyond.

Speakers

Plenary Lecture III: Wednesday, March 13, 2024



Dr. Sibendu Som

Dr. Sibendu Som is the Interim Director for the Center for Advanced Propulsion and Power (CAPP) in the Transportation and Power Systems Division at Argonne National Laboratory. From 2017 to 2021, he was manager of the Multi-physics Computational Research section. That team develops predictive simulation capabilities for industry in order to develop advanced high-efficiency, low-emission propulsion systems. Several computational models that the team developed are part of commercial computational codes. The group leverages the latest developments in high-performance computing (HPC) and machine learning (ML) to accelerate these high-fidelity simulations.

Dr. Som earned his Ph.D. in Mechanical Engineering from the University of Illinois at Chicago in 2009. Dr. Som has more than a decade of experience in multi-physics and multi-scale modeling of piston engines and gas turbines using HPC systems and artificial intelligence/ML tools. His current research focuses on the development of two-phase models and reacting flow models for propulsion and manufacturing applications. He also manages a large group of scientists working on topics ranging from piston engines, gas turbines, energy storage, offshore wind, and others. Among many accolades, Dr. Som is an SAE Fellow, recipient of the ASME George Westinghouse silver medal for eminent achievement and distinguished service, and a Recipient of the University of Illinois at Chicago "Distinguished Alumni Award".



Dr. Sili Deng, *Glassman Award Winner*

Dr. Sili Deng received her doctoral degree in Mechanical and Aerospace Engineering from Princeton University. After being a postdoctoral scholar at Stanford University, she joined MIT as an assistant professor in 2019. Dr. Deng received the Bernard Lewis Fellowship from the Combustion Institute in 2016, Frontiers of Engineering Award from the US National Academy of Engineering in 2021, and NSF CAREER Award in 2022.

Dr. Deng leads the Deng Energy and Nanotechnology Group at MIT. The group focuses on energy conversion and storage, specifically, the fundamental understanding of combustion and emissions, scientific machine learning for reacting flows, carbon-neutral energetic materials, and flame synthesis of materials for catalysis and energy storage.

2024 SPRING TECHNICAL MEETING

Eastern States Section of the Combustion Institute

University of Georgia
Athens, Georgia
March 10 – 13, 2024

Sunday, March 10, 2024

15:00 – 17:00 ESSCI Executive Board Meeting – Old College, North Campus, Room 100

18:00 – 20:00 Welcome Reception – Pecan Tree Galleria

Monday, March 11, 2024

8:00 – 16:00 Registration – Masters Hall Atrium, Georgia Center

8:00 – 8:20 Welcome Remarks/Announcements – Masters Hall, Georgia Center

Donald Leo, Dean and UGA Foundation Professor in Engineering, College of Engineering, University of Georgia

S. Jack Hu, Senior Vice President for Academic Affairs and Provost, UGA Foundation Distinguished Professor, University of Georgia

8:20 – 9:20 Plenary Lecture – Masters Hall

Timothy Lieuwen, *Georgia Institute of Technology*

Title: Combustion in a Net Zero World: Outlook and R&D Needs

Session Chair: Wyatt Culler, Honeywell International Inc.

9:20–9:30 Transfer

	Ammonia Kinetics I	Gas Turbine Operability I	Soot/Aerosols I
	Suite TU Session Chair: Z. Wang	Suit VW Session Chair: D. Dasgupta	Suite YZ Session Chair: R. Falkenstein-Smith
9:30	1A01: The kinetic coupling effect on the extinction characteristic of NH ₃ with n-heptane, iso-octane, and toluene <i>M.K. Yoon, F.L. Dryer, S.H. Won</i>	1B01: Effect of diluents on flame stability in constant flame speed mixtures for piloted, swirlstabilized flames <i>J. Rodriguez Camacho, J. O'Connor</i>	1C01: Oxygenated organic aerosol formation in low-temperature combustion of n-heptane blends <i>A.G. Conroy, O. El Hajj, R. Saleh, B. Rotavera</i>
9:50	1A02: Study of ammonia/methanol oxidation up to 100 atm <i>Z. Wang, B. Mei, N. Liu, A. Thawko, X. Mao, P. Glarborg, S.J. Klippenstein, Y. Ju</i>	1B02: Capturing sustainable aviation fuel ignition using empirical manifolds <i>N. Kincaid, S. Habibi, P. Pepiot</i>	1C02: Secondary organic aerosol formation potential of toluene and products of toluene combustion <i>A. Anosike, O. El Hajj, C.K. Glenn, S.W. Hartness, A.R. Webb, N.S. Dewey, B. Rotavera, R. Saleh</i>
10:10	1A03: Closing the gap between kinetics predictions and measurements from NH ₃ combustion experiments <i>R.E. Cornell, M.J. McQuaid</i>	1B03: Flashback characterization of additively manufactured swirl-stabilized fuel injector with varying surface roughness <i>P. Mohanty, S. Jalui, G. Manogharan, J. O'Connor, Y. Xuan</i>	1C03: An NSF user facility for measuring soot aerosol <i>A.R. Metcalf, J. Henry, D. Wang</i>

10:30–10:50 Break Pecan Tree Galleria

	Ammonia Kinetics II	Alternative Gas Turbine Fuels	Innovative experiments
	Suite TU Session Chair: Y. Peng	Suit VW Session Chair: J. Colborn	Suite YZ Session Chair: H/ Tang
10:50	1A04: Theoretical kinetics for modeling NH ₃ oxidation and pyrolysis <i>S.J. Klippenstein, R. Sivaramakrishnan, A.W. Jasper, C.R. Mulvihill, P. Glarborg</i>	1B04: Fuel property impact on flame behavior of sustainable aviation fuels <i>D. Dasgupta, S. Som</i>	1C04: Total absorptivity of glass in a non-gray absorbing/emitting N ₂ /CO ₂ /H ₂ O mixture environment <i>W.C. Tam, W.W. Yuen</i>
11:10	1A05: Implementation of new mixture rules in Cantera and implications for H ₂ and NH ₃ combustion simulations <i>P. Singal, J. Lee, L. Lei, R.L. Speth, M.P. Burke</i>	1B05: Influence of airflow and fuel pressure on swirling JP-8 and diesel flames <i>S.K. Das, B. Nawaz, M.N. Nasim, J. Landis, O. Dyakov, N. Van Dam, J.H. Mack</i>	1C05: Estimating fire heat release rate from video data and deep learning techniques <i>K. Prasad, M. Bundy, A. Hamins</i>
11:30	1A06: Prediction of minimum NO _x emission for cracked ammonia combustion <i>S. Gubbi, R. Cole, B. Emerson, D. Noble, R. Steele, W. Sun, T. Lieuwen</i>	1B06: Outlook for renewable liquid fuels in dualfuel gas turbine combustors <i>M. Webb, J. O'Connor, D.R. Noble, R. Steele</i>	1C06: Implementation of a dielectric-barrier discharge reactor for ammonia generation and NO _x destruction <i>J. Landis, V. Veng, Y. Zhang, B. Nawaz, M. Nasim, S.K. Das, J.P. Trelles, J.H. Mack</i>

2024 SPRING TECHNICAL MEETING

Monday, March 11, 2024

11:50:00 – 13:00 Lunch – Magnolia Ballrooms– Salons 4&5

11:50–13:00 Mentor/Mentee Event– Magnolia Ballroom– Salon 3

13:00–13:50– ESSCI General Member Meeting– Masters Hall

	Hydrocarbon Kinetics	Detonations & Supersonic Combustion	Flame Speed
	Suite TU Session Chair: P. Pepiot	Suite VW Session Chair: J. O'Connor	Suite YZ Session Chair: A.F. Safdari
14:00	1A07: Probing O ₂ -dependence of cyclopentyl reactions via isomer-resolved speciation <i>A.W. Hill, D.A. Moore, N.S. Dewey, S.W. Hartness, B. Rotavera</i>	1B07: Acoustic scattering from an array of injectors in annular geometries <i>N. Mignano, V. Acharya, T. Lieuwen</i>	1C07: Detection of flame wrinkling in spherically expanding flames using time series classification with pressure traces <i>B. Nawaz, M.N. Nasim, S.K. Das, J.H. Mack</i>
14:20	1A08: Modeling stereochemical-dependent chemical kinetics of cyclic ethers: Cis- and trans-isomers of 2,3-dimethyloxirane <i>N.S. Dewey, S.N. Elliott, S.J. Klippenstein, B. Rotavera</i>	1B08: Numerical and theoretical analysis of shock wave interactions with abrupt area changes: Reflection and transmission behavior <i>T. Kickliter, V. Acharya, T. Lieuwen</i>	1C08: Measurement of laminar burning speed of propylene, carbon dioxide and air mixtures at a high temperatures <i>Z. Lu, H. Metghalchi</i>
14:40	1A09: Numerical investigation of CO and NO production from premixed hydrogen/methane fuel blends <i>S. Singh, H. Rajagopalan, B. Emerson, D. Noble, R. Steele, T. Lieuwen</i>	1B09: Effect of flameholding cavity geometry on the flowfield characteristics of a solid fuel scramjet <i>Y. Prokesch, E. Schlussell, D. Gallegos, A. Duran, D. May, G. Young</i>	1C09: Propagation rates and chemistry of oxygen-enriched methane flames <i>A. Kokernak, J. Mathew, R. Sivaramakrishnan, J. Jayachandran</i>
15:00	1A10: Direct kinetic measurements of singlet oxygen atom reaction with dimethyl ether <i>H. Zhong, Q. Meng, B. Mei, A. Thawko, Z. Wang, Y. Ju</i>	1B10: Numerical and theoretical analysis of shock wave interactions with abrupt area changes: Flow energetics <i>T. Kickliter, V. Acharya, T. Lieuwen</i>	1C10: Laminar burning speed measurements of natural gas/hydrogen mixtures at elevated pressures <i>A.F. Safdari, L. Yovino, G. Kim, R.K. Rahman, S. Vasu</i>
15:20–15:40 Break Pecan Tree Galleria			
	Kinetics Methods	Flame Blowoff	Onstability & Extinction in Laminar Flames
	Suite TU Session Chair: R. West	Suite VW Session Chair: M. Webb	Suite YZ Session Chair: G. Young
15:40	1A11: Theory informed kinetics (ThInK 1.0) model for core combustion species <i>R. Sivaramakrishnan, D.H. Bross, M.P. Burke, S.N. Elliott, P. Glarborg, C.F. Goldsmith, N. Hansen, A.W. Jasper, N.J. Labbe, J.A. Miller, C.R. Mulvihill, B. Ruscic, Y. Tao, J. Zádor, S.J. Klippenstein</i>	1B11: Swirl number effects on the blowoff limits of swirl-stabilized flames <i>I. Rivera, C. Birkbeck, C. Torres Hernandez, N. Subasic, J. Rodriguez Camacho, A. Karmarkar, J. O'Connor</i>	1C11: Effect of thermodiffusive instabilities on the formation of N ₂ O and NO _x in lean partially cracked NH ₃ -air laminar premixed flames <i>S.L. Rzepka, H. Maldonado Colmán, M.E. Mueller</i>
16:00	1A12: Resolving discrepancies among experimental and theoretical data for the CH ₃ + OH Reaction using Multiscale Informatics <i>J.M. Pankauski, C.E. LaGrotta, J. Lee, M.P. Burke</i>	1B12: Effects of ammonia addition on lean blowout of methane flames in a model gas turbine combustor <i>A. Shealy, F.L. Dryer, S.H. Won</i>	1C12: Instability growth rates in hydrofluorocarbon/air flames: Analysis of the Rayleigh–Taylor instability <i>J.K. Tavares, J. Jayachandran</i>
16:20	1A13: Constructing an online database for accessible, theory-based, thermodynamic and kinetic properties <i>S.N. Elliott, S.J. Klippenstein</i>	1B13: The effect of centerbody geometry on lean blowoff in a swirl-stabilized flame <i>C. Birkbeck, I. Rivera, C. Torres Hernandez, J. Rodriguez Camacho, J. O'Connor</i>	1C13: Extinction of premixed counterflow ammonia-air flames <i>P. Papas, J.F. Stevens, R. Fang, C.-J. Sung, L.L. Smith</i>
16:40	1A14: Uncertainty quantification and constraint of chemical kinetic mechanisms based on flow reactor experiments <i>A.V. Kock, M.K. Yoon, F.L. Dryer, S.H. Won</i>	1B14: Large Eddy Simulation of a turbulent lifted flame using a multi-modal manifold-based combustion model and nonlinear generalized progress variable <i>I.J. Bonilla, C.E. Lacey, M.E. Mueller</i>	1C14: Extinction limits of formaldehyde-rich counterflow diffusion flames supplied by dissolved trioxane <i>G. Vosgerichian, M.K. Yoon, G. Capellades, S.H. Won, F.M. Haas</i>

2024 SPRING TECHNICAL MEETING

Monday, March 11, 2024
17:00-17:20 Break- Pecan Tree Galleria

	Low-Temperature Chemistry	Battery Fires	Soot/Aerosols II
	Suite TU Session Chair: M.P. Burke	Suite VW Session Chair: P. Westmoreland	Suite YZ Session Chair: H. Maldonado Colmán
17:20	1A15: New pressure-dependent correlation for the heat release rate of non-premixed cool flame <i>A. Thawko, T. Akiba, Z. Wang, B. Mei, Y. Ju</i>	1B15: Uncertainty quantification in lithium-ion battery thermal runaway modelling <i>B.C. Koenig, H. Chen, Q. Li, P. Zhao, S. Deng</i>	1C15: Low-temperature combustion emits primary organic aerosol resembling secondary organic aerosol <i>O. El Hajj, S.W. Hartness, G.W. Vandergrift, Y. Park, C.K. Glenn, A. Anosike, A.R. Webb, N.S. Dewey, A.C. Doner, Z. Cheng, G.S. Jatana, M. Moses-DeBusk, S. China, B. Rotavera, R. Saleh</i>
17:40	1A16: Low-temperature ignition and oxidation mechanisms of tetrahydropyran <i>S.W. Hartness, M. Saab, M. Preußker, R. Mazzotta, N.S. Dewey, A.W. Hill, G. Vanhove, Y. Fenard, K. Alexander Heufer, B. Rotavera</i>	1B16: Mathematical modeling of heat-induced decomposition kinetics leading to thermal runaway in lithium-ion batteries <i>S. Khan, M. Hasnain, J. Casa, A.O. Said, V. Akkerman, M.K. Selvaraj, A. Simeoni, H. Sezer</i>	1C16: A photoacoustic technique for measuring soot deposition on surfaces <i>A. Mensch, R. Falkenstein-Smith</i>
18:00	1A17: Experimental investigation of slowly propagating flames in microgravity <i>J. Mathew, J. Jayachandran</i>	1B17: Electrical characteristics of particle laden flames <i>A. Jerome, A. Saveliev</i>	1C17: Estimations of photophoresis and thermophoresis impacts on soot particle velocity <i>E.M. Veley, A.E. Mensch, R. Falkenstein-Smith, T.G. Cleary</i>

18:45-19:30 Dinner-Magnolia Ballrooms- Salon 1&2
19:30-21:00 Industry Panel- Masters Hall

2024 SPRING TECHNICAL MEETING

Tuesday, March 12, 2024

18:00–16:00 Registration– Masters Hall Atrium

7:55–8:00 Announcements– Masters Hall

8:00–9:00 Plenary Lecture – Masters Hall

Jillian Goldfarb, Cornell University

Title: Wanted: Fugitive Carbon. Holistic Valorization Pathways for the Integrated Biorefiner

Session Chair: James L. Urban, Worcester Polytechnic Institute

	Wildland Fire	Gas Turbine Heat Transfer	Chemical Modeling
	Suite TU Session Chair: A. Metcalf	Suite VW Session Chair: B. Bojko	Suite YZ Session Chair: R. Sivaramakrishnan
9:10	2A01: Analyzing the ignition capabilities of glowing firebrand accumulations <i>L. Zhu, J.L Urban</i>	2B01: Experimental design for testing the total heat flux through high-temperature components in high-hydrogen combustion environments <i>P. Richins, C. Surrency, J. O'Connor, S. Lynch</i>	2C01: Targeting the HNNO pathway to NO _x formation with jet-stirred reactor experiments selected by optimal experimental design <i>J. Lee, M.C. Barbet, M.P. Burke</i>
9:30	2A02: Flammability of ornamental vegetation under convective heating <i>J. Valdivia, X. Xi, A. Simeoni, J. Urban</i>	2B02: Effect of centerbody temperature on blowoff limits of a swirl-stabilized flame <i>C. Clark, C. Torres Hernandez, S. Markle, J. Colborn, J. O'Connor</i>	2C02: Modeling chemical kinetics and combustion properties from constant-volume combustion of energetic materials <i>S. Kim, S. Deng</i>
9:50	2A03: Towards parcel-scale WUI fire modelling: Morphology and bulk density estimation of ornamental vegetation <i>X. Xi, J. Valdivia, A. Simeoni, J. Urban</i>	2B03: Effect of inlet boundary layer development and fluctuations on reacting flow in a backward-facing step combustor at varying Re numbers <i>N. Tricard, B. Bojko</i>	2C03: Computationally efficient boundary-layer code for incinerator modeling with detailed PFOA chemistry <i>G. Kogekar, C.F. Goldsmith</i>
10:10	2A04: Mathematical model for predicting injuries and temperature distributions in stem exposed to fire <i>M.U. Khan, M. Hasnain, S. Khan, A. Simeoni, R. Ziazi, H. Sezer</i>	2B04: Impact of flame-wall interactions on combustor liner heat flux <i>J. Colborn, J. O'Connor</i>	2C04: Reactive molecular dynamics simulation of high-pressure ignition under rocket engine conditions <i>J.H. Martin, B. Akih-Kumgeh</i>
10:30–10:50 Break Pecan Tree Galleria			
	Biomass Combustion	Ammonia Combustors	Combustion Diagnostics
	Suite TU Session Chair: L. Wang	Suite VW Session Chair: M.E. Mueller	Suite YZ Session Chair: R. Vishwanath
10:50	2A05: Combustion of solid biofuels from hydrothermal carbonization of food waste <i>M. Pecchi, P. Motiei, J.L. Adair, J. O'Connor, J.L. Goldfarb</i>	2B05: Minimizing reactive nitrogen emissions in ammonia combustion: A novel rush-to-equilibrium concept <i>H. Maldonado Colmán, M.E. Mueller</i>	2C05: Diode laser absorption sensor near 2.2 μm for NH ₃ detection in a shock tube <i>Y. Peng, W. Sun</i>
11:10	2A06: Ignition characteristics of cellulose hydrochar using in-situ diagnostics <i>P. Motiei, M. Pecchi, J.L. Adair, J.L. Goldfarb, J. O'Connor</i>	2B06: NH ₃ /NH ₂ laser-induced fluorescence measurements in plasma-assisted ammonia swirling flames <i>H. Tang, S. Gubbi, W. Sun</i>	2C06: Reaction zone visualization of an ethylene-air flame in a dual-mode scramjet using CH C-X PLIF <i>A.J. Metro, R.D. Rockwell, A.D. Cutler, C.E. Dedic</i>
11:30	2A07: Rebuilding 3-D temperature field in industrial-sized biomass furnace by machine learning-based surrogate modelling <i>L. Wang, S. Deng</i>	2B07: Rich ammonia flame shapes and NO relaxation: Facility development and characterization <i>R. Cole, H. Rajagopalan, S. Gubbi, D. Wu, B. Emerson, D.R. Noble, R. Steele, W. Sun, T. Lieuwen</i>	2C07: CARS spectral fitting using a gradient descent optimization algorithm and spectral library interpolation <i>O.T. Petito, C.E. Dedic, A.D. Cutler</i>

11:50–13:00 Lunch– Magnolia Ballrooms– Salons 3,4,5

2024 SPRING TECHNICAL MEETING

Tuesday, March 12, 2024

Irv Glassman Young Investigator Lecture: Sili Deng, Massachusetts Institute of Technology

Title: Advancing Kinetic Modeling with Scientific Machine Learning

Session Chair: Michael P. Burke, Columbia University

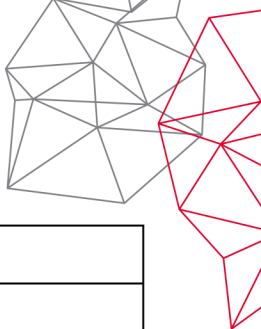
14:00–14:10 Transfer

	Hydrocarbon Fires	PFAS Kinetics	Propellant Combustion
	Suite TU Session Chair: E. Veleý	Suite VW Session Chair: C.J. Sung	Suite YZ Session Chair: S. Kesharwani
14:10	2A08: Measurements of burning behavior and fire properties of diesel, canola oil, and diesel/canola oil blends using the Cone Calorimeter <i>W. Gong, M.K. Selvaraj, A. Simeoni</i>	2B08: Computational insight into the degradation pathways for transforming perfluorobutane sulfonic acid to perfluorobutanoic acid <i>S. Sharma, C. Rocchio, C.F. Goldsmith</i>	2C08: Ignition study of hypergolic solid fuels through counterflow experiment using hydrogen peroxide spray <i>W.C. Lin, G. Young</i>
14:30	2A09: Examining the structure of propane fires in a vitiated environment <i>R. Falkenstein-Smith, T. Cleary</i>	2B09: Comprehensive gas-phase kinetics model and mechanism for incineration of C2 to C8 perfluorinated carboxylic acids <i>C.C. Murphy, H. Ram, T.P. Sadej, T.J. Mallo, P.R. Westmoreland</i>	2C09: Inert additive scaling effects on flame propagation in nanothermites <i>G. Tsai, S. Kim, S. Deng</i>
14:50	2A10: Experimental and numerical investigation of canola oil–diesel pool fire <i>N. Muniraj, W.Gong, M.K. Selvaraj, A. Simeoni</i>	2B10: Impact of low-temperature oxidation pathways on the thermal decomposition of PFAS at incinerator conditions <i>R.E. Cornell, M.J. McQuaid</i>	2C10: Active burning rate control of solid propellant via RF frequency hysteresis heating of magnetic nanoparticles <i>D.J. Ramirez, K. Walz, M. Zhao, E. Boyer, Q. Wang, R. Yetter</i>
15:10	2A11: Numerical modeling of spontaneous ignition in large coal stockpiles using finite volume method <i>A. Idris, S. Khan, M. Hasnain, M.K. Selvaraj, A. Simeoni, H. Sezer</i>	2B11: Computational thermochemistry for gas-phase thermal oxidation of PFAS components of AFFF <i>H. Ram, T.P. Sadej, C.C. Murphy, T.J. Mallo, P.R. Westmoreland</i>	2C11: Simulating HTPB pyrolysis and combustion in an opposed-flow burner with detailed kinetics in a quasi-one-dimensional model <i>C.P. Stone, C.C. Chen, R. Cornell, M.J. Mcquaid</i>

15:30–15:50 Break Pecan Tree Galleria

	Fire Fundamentals	Complex Kinetics	Turbulent Flames
	Suite TU Session Chair: P. Motiei	Suite VW Session Chair: S.N. Elliott	Suite YZ Session Chair: J. Rodriguez
15:50	2A12: Horizontal concurrent flame spread response to non-steady airflow <i>P. Pinto, A. Miska, X. Xi, J.L. Urban</i>	2B12: Computational investigation of the reaction mechanism for the thermal treatment of Hexafluoropropylene Oxide Dimer Acid (HFPO-DA) [GenX] <i>C. Rocchio, C.F. Goldsmith</i>	2C12: Large-scale turbulence effects on turbulent premixed planar flames <i>K. VanderKam, M.E. Mueller</i>
16:10	2A13: Downward opposed flame spread response to non-steady airflow <i>A. Miska, P. Pinto, X. Xi, J. Urban</i>	2B13: Construction of a chemical kinetic mechanism for a difluoromethane/propane system and extension of the database in reaction mechanism generator <i>N. Khalil, E.H. Guzman, C.F. Goldsmith, R.H. West</i>	2C13: Data assimilation for reacting flows: Deep learning PDE models to augment turbulent combustion simulations <i>P.R. Kakka, J.F. MacArt</i>
16:30	2A14: Three-dimensional mathematical modeling of heat and mass transfer during calcination of gypsum board exposed to fire <i>M. Hasnain, R. Paye, T. Borth, G.E. Gorbett, S.P. Kozhumal, H. Sezer</i>	2B14: Probing mechanisms of polymer pyrolysis in polyoxymethylene homopolymer and copolymer <i>A. Dumas, T.J. Mallo, P.R. Westmoreland</i>	2C14: Manifold-based modeling of supersonic turbulent combustion: Accounting for compressibility effects <i>J.B. Boerchers, H. Sitaraman, M.E. Mueller</i>

2024 SPRING TECHNICAL MEETING



Tuesday, March 12, 2024

	Fire Fundamentals	Complex Kinetics	Turbulent Flames
	Suite TU Session Chair: P. Motiei	Suite VW Session Chair: S.N. Elliott	Suite YZ Session Chair: J. Rodriguez
16:50	2A15: Toxicant measurements from wellventilated fires in reduced-scaled compartments <i>R.Harter, I. Sanders, X. Xi, N. Kuenning, J.L. Urban, R.M. Spearrin</i>	2B15: Toward molecular mechanisms of poly(methyl methacrylate) pyrolysis <i>T.J. Mallo, A. Dumas, P.R. Westmoreland</i>	2C15: DNS and manifold-based modeling for argon power cycles <i>D.A. Quan Reyes, D. Roekaerts, M.E. Mueller, J. van Oijen</i>
17:10	2A16: Quantifying firebrand generation from Douglas Fir: An intermediate-scale wind tunnel analysis with probabilistic modeling for wildfire spread prediction <i>F. Ebensperger, A. Simeoni</i>		2C16: Flexi-alcohol and advance RCCI combustion strategy to control NOx formation <i>V. Sharma, J.J. Thomas, G. Nagarajan, D. Ganesh</i>

18:30-21:00 Banquet

State Botanical Gardens of Georgia,
Conservatory Room



Wednesday, March 13, 2024

7:55 - 8:00 Announcements – Masters Hall

8:00 - 9:00 Plenary Lecture – Masters Hall

Sibendu Som, Argonne National Laboratory

Title: Accelerating Decarbonization of Transportation and Power Generation Sectors: Leveraging Leadership Computing & High-Fidelity Experiments

Session Chair: Sili Deng, Massachusetts Institute of Technology



2024 SPRING TECHNICAL MEETING

Wednesday, March 13, 2024

9:00–9:10 Transfer

	Computational Kinetic Techniques	Heterogeneous Combustion	IC Engines
	Suite TU Session Chair: K. Prasad	Suite VW Session Chair: Y. Shi	Suite YZ Session Chair: J.H. Mack
9:10	3A01: Radical stereochemistry: Accounting for diastereomers in kinetic mechanism development A.V. Copan, K.B. Moore III, S.N. Elliott, C.R. Mulvihill, L. Pratali Maffei, S.J. Klippenstein	3B01: Large eddy simulation of particle dispersion and clustering analysis in a pressurized reactive fluid-particle system L. Li, V. Akkerman, D. Magalhaes, R.L. Axelbaum	3C01: An experimental investigation on the combustion process of a direct injection heavy-duty diesel engine A. Kutkut, J. Kim, H. Li
9:30	3A02: Application of variational transition state theory, towards accurate calculations of combustion reactions Y. Kim, C.F. Goldsmith	3B02: Large eddy simulation of a pressurized reactive fluid-particle system: Analysis of single-particle dynamics L. Li, V. Akkerman, D. Magalhaes, M. Cheng, R.L. Axelbaum	3C02: Development of a quasi-dimension GCI combustion model guided by CFD J. Kim, H. Sun, A. Kutkut, H. Li
9:50	3A03: Gradient-based fast Bayesian experimental design for kinetic uncertainty reduction H. Chen, Q. Li, S. Deng	3B03: High-speed imaging of particle jetting in solid-state combustion S. Kesharwani, J. Goodenough, R.G. Blair, S.S. Vasu	3C03: The dark side of hydrogen combustion in reciprocating engine A. Thawko, B.B.B.D. Holtzer, L. Tartakovsky
11:10	3A04: Machine learning driven prediction of key physical properties of real fuels using NMR spectra data M. Burnett, F.L. Dryer, S.H. Won	3B04: Combustion of slurry droplets of magnesium hydride and n-dodecane R. Brunelle, J. Jayachandran	

10:30–10:50 Break Pecan Tree Galleria

	Neural Networks	Computational Techniques for Realistic	DDT
	Suite TU Session Chair: J. F. MacArt	Suite VW Session Chair: S. H. Won	Suite YZ Session Chair: J. Jayachandran
10:50	3A05: Physics informed neural networks with elemental and energy conservation for combustion kinetics calculations A. Almeldein, N. Van Dam	3B05: Computational fluid dynamics modeling of jet-stirred reactors J.F. DeJongh, B. Rotavera	3C05: Numerical modeling of plasma assisted deflagration to detonation transition in a microscale channel Z. Shi, X. Mao, A. Thawko, Y. Ju
11:10	3A06: Modeling 1D premixed hydrogen blended flames using Physics Informed Neural Networks (PINNs) S. Stoknes, H.P. Rajagopalan, V. Acharya, T. Lieuwen	3B06: Predicting hydrogen output through gasification via interpretable machine learning Y. Shi, D.M. Yepes Maya	3C06: Ignition-shock coupling via ignition kinetic enhancement in deflagration to detonation transition of dimethyl ether mixture A. Thawko, Z. Wang, B. Mei, Z. Shi, Y. Ju
11:30	3A07: Neural network coupled binary trees for reducing memory requirements of in-situ adaptive manifolds S.T. Fush, I.J. Bonilla, M.E. Mueller	3B07: Autonomous identification of heat release rate markers using integer optimization E.R. Madriz, V. Pannell, H. Chen, S. Deng	3C07: Theoretical analysis of detonation for Majda's model with more general ignition function Y. Sun

11:50 Adjourn

And we hope to see you at the

14th United States National Combustion Meeting
16 to 19 March 2025
Boston, Massachusetts

2024 Eastern States Spring Technical Meeting Author Listing

Author	Paper #	Author	Paper #	Author	Paper #
Acharya, V.	1B07, 1B08, 1B10, 3A06	Fang, R.	1C13	Labbe, N.J.	1A11
Adair, J.L.	2A05, 2A06	Fenard, Y.	1A16	Lacey, C.E.	1B14
Akiba, T.	1A15	Fush, S.T.	3A07	LaGrotta, C.E.	1A12
Akih-Kumgeh, B.	2C04	Gallegos, D.	1B09	Landis, J.	1B05, 1C06
Akkerman, V.	1B16, 3B01, 3B02	Ganesh, D.	2C16	Lee, J.	1A05, 1A12, 2C01
Almeldein, A.	3A05	Glarborg, P.	1A02, 1A04, 1A11	Lei, L.	1A05
Anosike, A.	1C02, 1C15	Glenn, C.K.	1C02, 1C15	Li, H.	3C01, 3C02
Axelbaum, R.L.	3B01, 3B02	Goldfarb, J.L.	2A05, 2A06	Li, L.	3B01, 3B02
Barbet, M.C.	2C01	Goldsmith, C.F.	1A11, 2B08, 2B12, 2B13, 2C03, 3A02	Li, Q.	1B15, 3A03
Birkbeck, C.	1B11, 1B13	Gong, W.	2A08, 2A10	Lieuwen, T.	1A06, 1B07, 1B08, 1A09, 1B10, 2B07, 3A06
Blair, R.G.	3B03	Goodenough, J.	3B03	Lin, W.-C.	2C08
Boerchers, J.B.	2C14	Gorbett, G.E.	2A14	Liu, N.	1A02
Bojko, B.	2B03	Gubbi, S.	1A06, 2B06, 2B07	Lu, Z.	1C08
Bonilla, I.J.	1B14, 3A07	Guzman, E.H.	2B13	Lynch, S.	2B01
Borth, T.	2A14	Haas, F.M.	1C14	MacArt, J.F.	2C13
Boyer, E.	2C10	Habibi, S.	1B02	Mack, J.H.	1B05, 1C06, 1C07
Bross, D.H.	1A11	Hamins, A.	1C05	Madriz, E.R.	3B07
Brunelle, R.	3B04	Hansen, N.	1A11	Magalhaes, D.	3B01, 3B02
Bundy, M.	1C05	Harter, R.	2A15	Maldonado Colmán, H.	1C11, 2B05
Burke, M.P.	1A05, 1A11, 1A12, 2C01	Hartness, S.W.	1C02, 1A07, 1C15, 1A16	Mallo, T.J.	2B09, 2B11, 2B14, 2B15
Burnett, M.	3A04	Hasnain, M.	1B16, 2A04, 2A11, 2A14	Manogharan, G.	1B03
Capellades, G.	1C14	Henry, J.	1C03	Mao, X.	1A02, 3C05
Casa, J.	1B16	Heufer, K.A.	1A16	Markle, S.	2B02
Chen, C.-C.	2C11	Hill, A.W.	1A07, 1A16	Martin, J.H.	2C04
Chen, H.	1B15, 3A03, 3B07	Holtzer, B.B.B.D.	3C03	Mathew, J.	1C09, 1A17
Cheng, M.	3B02	Idris, A.	2A11	May, D.	1B09
Cheng, Z.	1C15	Jalui, S.	1B03	Mazzotta, R.	1A16
China, B.	1C15	Jasper, A.W.	1A04, 1A11	McQuaid, M.J.	1A03, 2B10, 2C11
Clark, C.	2B02	Jatana, G.S.	1C15	Mei, B.	1A02, 1A10, 1A15, 3C06
Cleary, T.G.	1C17, 2A09	Jayachandran, J.	1C09, 1C12, 1A17, 3B04	Meng, Q.	1A10
Colborn, J.	2B02, 2B04	Jerome, A.	1B17	Mensch, A.	1C16, 1C17
Cole, R.	1A06, 2B07	Ju, Y.	1A02, 1A10, 1A15, 3C05, 3C06	Metcalf, A.R.	1C03
Conroy, A.G.	1C01	Kakka, P.R.	2C13	Metghalchi, H.	1C08
Copan, A.V.	3A01	Karmarkar, A.	1B11	Metro, A.J.	2C06
Cornell, R.E.	1A03, 2B10, 2C11	Kesharwani, S.	3B03	Mignano, N.	1B07
Cutler, A.D.	2C06, 2C07	Khalil, N.	2B13	Miller, J.A.	1A11
Das, S.K.	1B05, 1C06, 1C07	Khan, M.U.	2A04	Miska, A.	2A12, 2A13
Dasgupta, D.	1B04	Khan, S.	1B16, 2A04, 2A11	Mohanty, P.	1B03
Dedic, C.E.	2C06, 2C07	Kickliter, T.	1B08, 1B10	Moore III, K.B.	3A01
DeJongh, J.F.	3B05	Kim, G.	1C10	Moore, D.A.	1A07
Deng, S.	1B15, 2C02, 2A07, 2C09, 3A03, 3B07	Kim, J.	3C01, 3C02	Moses-DeBusk, M.	1C15
Dewey, N.S.	1C02, 1A07, 1A08, 1C15, 1A16	Kim, S.	2C02, 2C09	Motiei, P.	2A05, 2A06
Doner, A.C.	1C15	Kim, Y.	3A02	Mueller, M.E.	1C11, 1B14, 2B05, 2C12, 2C14, 2C15, 3A07
Dryer, F.L.	1A01, 1B12, 1A14, 3A04	Kincaid, N.	1B02	Mulvihill, C.R.	1A04, 1A11, 3A01
Dumas, A.	2B14, 2B15	Klippenstein, S.J.	1A02, 1A04, 1A08, 1A11, 1A13, 3A01	Muniraj, N.	2A10
Duran, A.	1B09	Kock, A.V.	1A14	Murphy, C.C.	2B09, 2B11
Dyakov, O.	1B05	Koenig, B.C.	1B15	Nagarajan, G.	2C16
Ebensperger, F.	2A16	Kogekar, G.	2C03	Nasim, M.N.	1B05, 1C06, 1C07
El Hajj, O.	1C01, 1C02, 1C15	Kokernak, A.	1C09	Nawaz, B.	1B05, 1C06, 1C07
Elliott, S.N.	1A08, 1A11, 1A13, 3A01	Kozhumal, S.P.	2A14	Noble, D.R.	1A06, 1B06,
Emerson, B.	1A06, 1A09, 2B07	Kutkut, A.	3C01, 3C02		
Falkenstein-Smith, R.	1C16, 1C17, 2A09				

Author	Paper #	Author	Paper #	Author	Paper #
.....	1A09, 2B07	Roekaerts, D.	2C15	Tricard, N.	2B03
O'Connor, J.	1B01, 1B03,	Rotavera, B.	1C01, 1C02,	Tsai, G.	2C09
.....	1B06, 1B11, 1B13, 2B01,	.....	1A07, 1A08,	Urban, J.L.	2A01, 2A02, 2A03,
.....	2B02, 2B04, 2A05, 2A06	.....	1C15, 1A16, 3B05	.....	2A12, 2A13, 2A15
Pankauski, J.M.	1A12	Ruscic, B.	1A11	Valdivia, J.	2A02, 2A03
Pannell, V.	3B07	Rzepka, S.L.	1C11	Van Dam, N.	1B05, 3A05
Papas, P.	1C13	Saab, M.	1A16	van Oijen, J.	2C15
Park, Y.	1C15	Sadej, T.P.	2B09, 2B11	Vandergrift, G.W.	1C15
Paye, R.	2A14	Safdari, A.F.	1C10	VanderKam, K.	2C12
Pecchi, M.	2A05, 2A06	Said, A.O.	1B16	Vanhove, G.	1A16
Peng, Y.	2C05	Saleh, R.	1C01, 1C02, 1C15	Vasu, S.S.	1C10, 3B03
Pepiot, P.	1B02	Sanders, I.	2A15	Veley, E.M.	1C17
Petito, O.T.	2C07	Saveliev, A.	1B17	Veng, V.	1C06
Pinto, P.	2A12, 2A13	Schlussell, E.	1B09	Vosgerichian, G.	1C14
Prasad, K.	1C05	Selvaraj, M.K.	1B16, 2A08,	Walz, K.	2C10
Pratali Maffei, L.	3A01	.....	2A10, 2A11	Wang, D.	1C03
Preußker, M.	1A16	Sezer, H.	1B16, 2A04,	Wang, L.	2A07
Prokesch, Y.	1B09	.....	2A11, 2A14	Wang, Q.	2C10
Quan Reyes, D.A.	2C15	Sharma, S.	2B08	Wang, Z.	1A02, 1A10,
Rahman, R.K.	1C10	Sharma, V.	2C16	.....	1A15, 3C06
Rajagopalan, H.	1A09,	Shealy, A.	1B12	Webb, A.R.	1C02, 1C15
.....	2B07, 3A06	Shi, Y.	3B06	Webb, M.	1B06
Ram, H.	2B09, 2B11	Shi, Z.	3C05, 3C06	West, R.H.	2B13
Ramirez, D.J.	2C10	Simeoni, A.	1B16, 2A02,	Westmoreland, P.R.	2B09,
Richins, P.	2B01	.....	2A03, 2A04, 2A08,	.....	2B11, 2B14, 2B15
Rivera, I.	1B11, 1B13	.....	2A10, 2A11, 2A16	Won, S.H.	1A01, 1B12,
Rocchio, C.	2B08, 2B12	Singal, P.	1A05	.....	1A14, 1C14, 3A04
Rockwell, R.D.	2C06	Singh, S.	1A09	Wu, D.	2B07
Rodriguez Camacho, J.	1B01,	Sitaraman, H.	2C14	Xi, X.	2A02, 2A03,
.....	1B11, 1B13	Sivaramakrishnan, R.	1A04,	.....	2A12, 2A13, 2A15
Roekaerts, D.	2C15	.....	1C09, 1A11	Xuan, Y.	1B03
Rotavera, B.	1C01, 1C02,	Smith, L.L.	1C13	Yepes Maya, D.M.	3B06
.....	1A07, 1A08,	Som, S.	1B04	Yetter, R.	2C10
.....	1C15, 1A16, 3B05	Spearrin, R.M.	2A15	Yoon, M.K.	1A01, 1A14, 1C14
Ruscic, B.	1A11	Speth, R.L.	1A05	Young, G.	1B09, 2C08
Rzepka, S.L.	1C11	Steele, R.	1A06, 1B06,	Yovino, L.	1C10
Saab, M.	1A16	.....	1A09, 2B07	Yuen, W.W.	1C04
Sadej, T.P.	2B09, 2B11	Stevens, J.F.	1C13	Zádor, J.	1A11
Safdari, A.F.	1C10	Stoknes, S.	3A06	Zhang, Y.	1C06
Said, A.O.	1B16	Stone, C.P.	2C11	Zhao, M.	2C10
Saleh, R.	1C01, 1C02, 1C15	Subasic, N.	1B11	Zhao, P.	1B15
Sanders, I.	2A15	Sun, H.	3C02	Zhong, H.	1A10
Saveliev, A.	1B17	Sun, W.	1A06, 2C05,	Zhu, L.	2A01
Schlussell, E.	1B09	.....	2B06, 2B07	Ziazi, R.	2A04
Singal, P.	1A05	Sun, Y.	3C07		
Singh, S.	1A09	Sung, C.-J.	1C13		
Sitaraman, H.	2C14	Surrency, C.	2B01		
Sivaramakrishnan, R.	1A04,	Tam, W.C.	1C04		
.....	1C09, 1A11	Tang, H.	2B06		
.....	2B07, 3A06	Tao, Y.	1A11		
Ram, H.	2B09, 2B11	Tartakovsky, L.	3C03		
Ramirez, D.J.	2C10	Tavares, J.K.	1C12		
Richins, P.	2B01	Thawko, A.	1A02, 1A10, 1A15,		
Rivera, I.	1B11, 1B13	.....	3C03, 3C05, 3C06		
Rocchio, C.	2B08, 2B12	Thomas, J.J.	2C16		
Rockwell, R.D.	2C06	Torres Hernandez, C.	1B11,		
Rodriguez Camacho, J.	1B01,	.....	1B13, 2B02		
.....	1B11, 1B13	Trelles, J.P.	1C06		

