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Simone Hochgreb

Expertise

Fluid mechanics and reacting flows, with a focus on the development and application of experimental methods and optical diagnostics. Experimental methods and modelling of phenomena relevant to engines and gas turbines, including sprays and turbulent combustion, emissions, high pressure combustion, autoignition and thermoacoustics. Current interests are in the application of optical diagnostics and spectroscopy to reacting flows for turbulence-flame interactions, nanoparticle formation and measurement, and thermoacoustic instabilities.

Education

1986–1991 **PhD, Mechanical and Aerospace Engineering**, *Princeton University*, USA

Title An Experimental and Numerical Study on the Oxidation of Formaldehyde

1980–1985 **B.Sc., Mechanical Engineering**, *University of São Paulo*, SP,Brazil

Experience

2002–Present **Professor of Engineering**, *University of Cambridge*, Cambridge, UK

2000–2002 **Managing Engineer**, *Exponent, Inc.*, Natick, MA, USA

2021–2023 **Visiting Professor**, *INSA-CORIA*, Rouen, France

2014–2016 **Visiting Professor**, *Instituto Tecnológico da Aeronáutica (ITA)*, São José dos Campos, SP, Brazil

1999–2000 **Principal Investigator**, *Sandia National Laboratories*, Livermore, CA, USA

1996–1999 **Principal Investigator**, *Massachusetts Institute of Technology*, Cambridge, MA, USA

1991–1996 **Principal Investigator**, *Massachusetts Institute of Technology*, Cambridge, MA, USA

Awards

2023 Best Poster Award for PhD student Oussama Chaib, IoP Meeting, Combustion Physics Group

2023 Arthur Lefebvre Best Dissertation Award for PhD student Francesca de Domenico

2020 Distinguished Fellow, the International Institute of Acoustics and Vibration

2018 Fellow of the Combustion Institute

2018 Best Paper Award, Japanese Symposium on Combustion

2016 Best Poster Award, PhD Student Robert Nishida, UK Aerosol Society

2013 IoP Best Combustion Dissertation Award (M. S. Sweeney)

2011 Fellow Royal Aeronautical Society
2003 Royal Society Wolfson Merit Award
1996 Society of Automotive Engineers Ralph R. Teetor Award
1993 General Electric Career Development Award
1991 Bradley Career Development Award
1989 Engineering Council Award for Excellence in Teaching, Princeton University
1989 Foundation for the Advancement of Scientific Research of the State of São Paulo Award
1986 Guggenheim Fellowship
1986 American Association for University Women Award
1986 Zonta International Award (declined)

Professional Activities

2023–2024 **Chair**, *Turbulent Combustion Colloquium*, 40th Symposium on Combustion, The Combustion Institute

2023–2025 **Chair**, *Gordon Research Conference on Laser Diagnostics in Energy and Combustion Science*

2022–2023 **Vice-Chair**, *Gordon Research Conference on Laser Diagnostics in Energy and Combustion Science, 14-21 July*, Sunday River, ME, USA

2020-2022 **Member,Vice-Chair**, *PRISMA Review Panel, Physical Sciences*, Swedish Research Council

2022 **Organiser**, *Low Carbon Combustion Meeting*, 5-6 April, 2022, Cambridge, UK

2021–2022 **Member**, *Editorial Board*, Journal of Aerosol Science

2019–2023 **Vice-Chair**, *Gordon Research Conference on Energy and Combustion Science, 9-14 July, Newry, MA, USA*

2019 **Organiser**, *Cambridge-Combustion Institute Summer School*, 8-12 July, Cambridge, UK

2017–2021 **Chair**, *The Combustion Institute*, British Section

2016–2022 **Member**, *Editorial Board*, Combustion and Flame

2016–2022 **Member**, *Board of Directors*, The Combustion Institute

2016–2021 **Member**, *PRACE European Supercomputing Access Committee*

2012–2017 **Member**, *Advisory Board*, Sandia National Laboratories Combustion Research Facility

2012–2018 **Member**, *Tsuji Young Investigator Award Committee*, The Combustion Institute

2015 **Member**, *Silver Medal Award Committee*, The Combustion Institute

2014–2018 **Associated Editor**, *Proceedings of the IMechE Part G: Journal of Aerospace Engineering*

2014–2017 **Member**, *Advisory Board*, CBC workshop on coal and biomass conversion

2014 **Member**, *Gold Medal Award Committee*, The Combustion Institute

2011–2013 **Session coordinator**, *Gordon Conference on Laser Diagnostics in Combustion*

2012 **Chair**, *Gold Medal Nomination Committee*, The Combustion Institute

2012 **Co-Chair**, *Gas Turbines and Internal Combustion Engines Colloquium*, 35th Symposium on Combustion, The Combustion Institute

2013–2017 **Webmaster and Newsletter Editor**, *The Combustion Institute*, British Section

2008–2013 **Hon. Secretary**, *The Combustion Institute*, British Section

2008–2013 **Hon. Secretary**, *The Combustion Institute*, British Section

2011–2012 **Chair**, *International Advisory Board*, Swedish Internal Combustion Engine Consortia

2006–2012 **Chair**, *International Advisory Board*, Chalmers Engine Research Center, Chalmers University Göteborg, Sweden

2008–2010 **Chair**, *International Advisory Board*, KTH Center for Engine and Turbomachinery Research, KTH, Sweden

2010 **Organiser**, *Combustion in Gas Turbines: Present and Future Challenges*, Combustion Institute, British Section Meeting, Cambridge, UK

2006 **Member**, *Royal Society Member of Parliament-Scientist Pairing Scheme*

2001–2003 **Member**, *Committee on Carbon Monoxide Episodes in Meteorological and Topological Problem Areas*, National Research Council, USA

1999-2002 **Member**, *Horning Award Committee*, Society of Automotive Engineers

2001–2003 **Member**, *Panel on the Partnership for a New Generation of Vehicles*, National Research Council, USA

1996 **Member**, *Review Panel: Toxicological and Performance Aspects of Oxygenated Motor Fuels*, National Research Council, USA

Research Highlights

LIGS First demonstration of laser induced grating spectroscopy in gas turbine combustors.

LII-PIV First demonstration of laser-induced-incandescence based particle-image velocimetry for two-phase flow measurements.

LIGS First demonstration of 1064 nm laser induced grating spectroscopy for flame temperatures at pressure (jointly with KAUST and Oxford).

Turbulent flames 3D measurements of flame surfaces. Structure and measurements in turbulent flames. Highly resolved scalar and velocity measurements for understanding the underlying microstructure structure of premixed and stratified flames, in collaboration with R. Barlow at Sandia National Laboratories and A. Dreizler at TU Darmstadt. Adopted as target flame at the TNF workshop. Dual camera thermographic PIV measurements of turbulent jets.

Nanoparticles Development of compact nanoparticle sensors. Development of compact nanoparticle measurement device based on photoionization, and bipolar charging. Numerical methods for aerosol ionization and transport. Cavity measurements of nanoparticles using extinction and laser induced incandescence.

Instabilities First direct measurements of entropy and compositional spots. Interaction of self-excited and forced instabilities, how they can be suppressed or enhanced by forcing. Effect of fuel stratification on flame response.

Relight First measurements of measurements of flame development and spray distribution under conditions of altitude relight, at the Rolls-Royce cold relight facility. High-speed visualization of the flame kernel development and simultaneous measurements of the spray distribution revealed the role of ignition energy (minimal), fuel distribution and atomization (small) and the important role of the flow pattern and critical strain on flame survival and transport.

High-pressure Industrial scale experiments in a high pressure, high temperature (10 bar, 600 °C, 1 kg/s) combustion facility. Investigation of the dynamic behaviour and flame transfer function of aeroengine lean direct injector nozzles, and full quartz combustors with secondary air inlets for investigation of the imaging distribution of soot and particulate matter in very rich combustion nozzles.

Biofuels The laminar flame speeds of biofuels and the sensitivity to strain determined using the wall impingement technique, and compared to existing and new models. Measurements of the behaviour and soot production of biofuels in heated spray flames and liquid pools.

Gasoline engines Sprays and particulate matter. Produced the first LDA measurements in DISI measurements; demonstrated flash boiling. First measurements of nanoparticles and models for their formation in gasoline engines.

Autoignition Produced the first measurements and simulations demonstrating the effect of the roll-up vortex in rapid compression machines. Co-developed a practical model for suppression of corner vortex, and accounting for thermal boundary layer growth.

Current Research Projects

2023-2026 *Understanding Turbulent Hydrogen Flames and Instability via Measurements and Simulations*, EPRSC UK, PI with A. Aspden (U. Newcastle): three year project on optical diagnostic measurements and direct numerical simulations in hydrogen flames.

2021-2023 *DOLFIN (DrOplet-Laden Flame INteractions)*, Region Normadie, France, PI with B. Renou, A. Cessou (INSA-Rouen): two year project on optical diagnostic measurements to understand the role of droplets on strained laminar flames.

2020-2023 *Flame Spray Pyrolysis of New Battery Materials*, EPRSC UK, co-PI with K. Luo, A. Boies, M. de Volder: three year project on optical diagnostics, sampling and simulations for flame-spray pyrolysis

2019-2024 *Aerosol Centre for Doctoral Training*, EPSRC UK co-PI, 7 university grant, 5-year Centre of Excellence on Aerosols (PI: Bristol University).

2020-2023 *Tracer-free, non-intrusive, time- and space-resolved temperature and scalar measurements*, EPSRC UK , PI, multi-university (Oxford, Cardiff) using LIGS for temperature measurements in high pressure gas turbine environments..

Teaching experience

2020-2023 *INSA Rouen, France.* MSc level lectures on methods and modelling in turbulent combustion.

2002-2023 *University of Cambridge.* Thermo-fluids core undergraduate and graduate lectures and laboratory design and demonstration in fluid mechanics, thermodynamics, heat transfer, measurements. Graduate level classes in combustion, internal combustion engines, and reacting flows. Graduate lectures in optical diagnostics and spectroscopy.

1991-1999 *Massachusetts Institute of Technology.* Thermo-fluids core undergraduate courses in fluid mechanics, thermodynamics, measurement methods. Graduate course in statistical thermodynamics.

Supervision experience

PhD 39 PhD thesis supervised, 3 currently in progress

MSc/MEng supervision of a total of 30-40 students since moving to Cambridge (2-4 per year), and about 10 at MIT

Conference Invited Lectures

2023 *FLOW Summer School, KTH, Sweden.* Day of lectures and practicals on optical diagnostic methods for turbulent combustion.

2023 *How thermodiffusive instabilities enhance the rate of combustion in hydrogen fuel mixtures* , Network H+C Workshop: Technical and socio-economical aspects of transition to hydrogen in heating and cooling, Sep 21, 2023, Institute of Physics, London.

2022 *How fast can we burn, 2.0*, Keynote, 39th Symposium on Combustion, July 24-30, Vancouver, Canada.

2020 *Narrowing the gap between experiments and models in turbulent reacting flows*, Keynote, Heraeus Stiftung Seminar, Fuels, Processes and Combustion Physics in the Energy Transformation, Bad Honnef, Germany, March 8-12, 2020.

2019 *Tracer-free temperature and composition measurements in reacting flows with LIGS (Laser Induced Grating Spectroscopy)*, HTPC meeting, UniBW 19-20 September, 2019.

2019 *Using modelling and PIV-LII to understand droplet-laden combustion in laminar flames*, Gordon Research Conference on Laser Diagnostics in Energy and Combustion Science, June 23-28, 2019.

2018 *Mind the gap: turbulent combustion model validation and future needs*, Topical Review, International Symposium on Combustion, 8 August 2018, Dublin, Ireland.

2017 *Experimental diagnostics for reacting flows and thermoacoustics*, Princeton University Seminar Series, 17 November, 2016, Princeton, NJ.

2016 *An overview of optical methods for non-intrusive soot and particle measurements*, Annual Aerosol Society Conference, 10 November, 2016 Birmingham, UK.

2016 *Understanding the structure and dynamics of turbulent reacting flows via selective experiments*, 11th International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements, 21-23 September 2016, Palermo, Italy.

2016 *Probing the structure of turbulent pulverized coal flames: a review of non-intrusive methods*, Oxyflame First International Workshop, Montabaur, Germany, 10-11 Feb, 2016.

2015 *Still burning after all these years: better, cleaner, and less*, Combura Workshop, Soesterberg, Netherlands, 7-8 October 2015

2015 *Velocity and scalar database for coal and methane flames*, Coal and Biomass Combustion Workshop, Avignon, 19 April 2015.

2015 *Extracting data from turbulent flames and informing models*, Gordon Conference in Laser Diagnostics for Combustion, Waterville Valley, 9-13 August 2015.

2014 *Making Sense of Measurements in Instabilities and Turbulent Flames*, SPEIC2014, Lisbon, 19-21 November 2014.

2014 *Understanding real flames through high pressure experiments*, Clean Combustion Workshop, KAUST, Saudi Arabia, 17-19 February, 2014.

2014 *Measurements in thermoacoustic systems*, TANGO Network Lecture Series, IIT Bangalore, Chennai, India, 4-7 Feb 2014.

2013 *The structure and dynamics of stratified turbulent flames*, Keynote Talk, European Combustion Meeting, Lund, June 2013.

2012 *Rapid compression machine diagnostics – an overview*, 1st RCM Workshop, Argonne National Laboratories, August 2012.

2013 *Laser applications to oxycoal flames*, Combustion Institute (British Section) Autumn Meeting, Imperial College, London, June 2012.

2012 *Experiments on the structure of stratified Turbulent Flames*, TNF11 Workshop, Heidelberg, July 2012.

2013 *High Resolution measurements in premixed and stratified turbulent Flames*, ERCOFTAC Meeting, Rouen, Sep 2011.

2011 *Measurements in turbulent stratified flames with recirculation*, COMBINA Workshop, Ajaccio, June 2011.

2010 *Overview of Stratified Experiments*, TNF Workshop, Beijing, July 2010.

2009 *Measurements on the structure of premixed and stratified turbulent flames*, Invited Lecture, 6th Mediterranean Combustion Meeting, Ajaccio, Corsica, 10 June 2009.

2009 *High brow and low brow: from very applied to very fundamental approaches to gas turbine combustion*, BES Invited Speaker Series, Sandia National Laboratories, Livermore, California, 7 May 2009.

2009 *Measurements on the structure of premixed and stratified turbulent flames*, Combustion Institute (British Section) Autumn Meeting, Imperial College, London, 8 January 2009.

2005 *Burning cleaner, burning less: what combustion science can do*, Cambridge Philosophical Society, 2005.

1993 *Internal combustion engines: current and potential performance*, NSF/DOE Workshop on Fuel Cells, Washington, D.C., Dec. 14-16, 1993.

Languages

English	Native	
Portuguese	Mother tongue	
German	Advanced	*Reading and comprehension*
French	Advanced	*Reading and comprehension*

Patents

Patent *Particle Sensor and Sensing Method*, GB 1919455.4, Nishida, R. T. , Johnson, T. J., Hochgreb, S. Boies, A. M., Particle Sensor and Sensing Method Using Bipolar Charging.

Patent *Particle Measurement Apparatus*, GB 1609868.3, US 20170350862: Nishida, R. T. , Hochgreb, S., Boies, A. M., Saffell, J., Particle measurement apparatus and methods for determining concentration and size parameters of particles in a gas sample.

Publications

ORCID link https://orcid.org/0000-0001-7192-4786

Book

2004 Homsy, G A, H Aref, K S Breuer, S Hochgreb, J R Koseff, BR Munsen, K G Powell, C R Robertson, and S T Thoroddsen (2004). "Multimedia fluid mechanics". Vol. CD ROM. Cambridge University Press.

Book Chapters

2007 Hochgreb, S. and R. Balachandran (2007). "Combustion Instabilities in Basics of Aeroacoustics and Thermoacoustics", ed. by J. Anthoine. VKI. Chap. Measurement Techniques for Turbulent Combustion Instabilities.

1998 Hochgreb, S (1998). "Handbook of Air Pollution from Internal Combustion Engines: Pollutant Formation and Control", ed. by E. Sher. Academic Press. Chap. Combustion Related Emissions in Spark Ignition Engines.

Journal Publications

2023 Chaib, Oussama, Yutao Zheng, Simone Hochgreb, and Isaac Boxx (2023). "Hybrid algorithm for the detection of turbulent flame fronts", *Experiments in Fluids* 64.5, p. 104.

Hochgreb, Simone (2023). "How fast can we burn, 2.0", *Proceedings of the Combustion Institute* 39.2, pp. 2077–2105.

Tian, B., L. Fan, C.T. Chong, Z. Gao, J.-H. Ng, S. Ni, L. Zhu, and S. Hochgreb (2023). "Soot volume fraction and size measurements over laminar pool flames and pre-vaporised non-premixed flames of biofuels, methyl esters and blends with diesel", *Experimental Thermal and Fluid Science* 141, p. 110794.

Zheng, Yutao, Lee Weller, and Simone Hochgreb (2023). "3D Flame surface density measurements via orthogonal cross-planar mie scattering in a low-turbulence bunsen flame", *Proceedings of the Combustion Institute* 39.2, pp. 2369–2377.

2022 Chong, Cheng Tung, Bo Tian, Jo-Han Ng, Luming Fan, Manh-Vu Tran, Cen Zhang, and Simone Hochgreb (2022). "Measurements of soot and response optimisation of laminar pool and prevaporised jet flames for various oxygenated biofuels", *Combustion and Flame* 245, p. 112328.

Woo, Mino, Mario A. Schriefl, Markus Knoll, Adam M. Boies, Marc E.J. Stettler, Simone Hochgreb, and Robert T. Nishida (2022). "Open-source modelling of aerosol dynamics and computational fluid dynamics: Bipolar and unipolar diffusion charging and photoelectric charging", *Computer Physics Communications* 278, p. 108399.

Zheng, Yutao, Lee Weller, and Simone Hochgreb (2022). "Instantaneous flame front identification by Mie scattering vs. OH PLIF in low turbulence Bunsen flame", *Experiments in Fluids* 63.5, p. 79.

2021 De Domenico, Francesca, Erwan O. Rolland, Jocelino Rodrigues, Luca Magri, and Simone Hochgreb (2021). "Compositional and entropy indirect noise generated in subsonic non-isentropic nozzles", *Journal of Fluid Mechanics* 910, A5.

experiment, The effect of fine droplets on laminar propagation speed of a strained acetone-methane flame: and simulations (2021). "The effect of fine droplets on laminar propagation speed of a strained acetone-methaneflame: experiment and simulations", *Combustion and Flame*.

Fan, Luming, Cheng Tung Chong, Kenji Tanno, Dante McGrath, Yutao Zheng, and Simone Hochgreb (2021). "Measurement of the effect of water droplets on strained laminar flames using two-phase PIV", *Proceedings of the Combustion Institute* 38.2, pp. 3183–3192.

Tian, B., A.X. Liu, C.T. Chong, L. Fan, S. Ni, J.-H. Ng, S. Rigopoulos, K.H. Luo, and S. Hochgreb (2021). "Experimental and numerical study on soot formation in laminar diffusion flames of biodiesels and methyl esters", *Proceedings of the Combustion Institute* 38.1, pp. 1335–1344.

Tian, Bo, Anxiong Liu, Cheng Tung Chong, Luming Fan, Shiyao Ni, Andrew Hull, Angelica Hull, Stelios Rigopoulos, Kai H. Luo, and Simone Hochgreb (2021). "Measurement and simulation of sooting characteristics by an ATJ-SKA biojet fuel and blends with Jet A-1 fuel in laminar non-premixed flames", *Combustion and Flame* 233, p. 111582.

2020 Chong, Cheng Tung, Bo Tian, Jo-Han Ng, Luming Fan, Shiyao Ni, Kang Yao Wong, and Simone Hochgreb (2020). "Quantification of carbon particulates produced under open liquid pool and prevaporised flame conditions: Waste cooking oil biodiesel and diesel blends", *Fuel* 270, p. 117469.

Fan, Luming, Cheng Tung Chong, Bo Tian, Yutao Zheng, Dante McGrath, and Simone Hochgreb (2020). "Simultaneous two-phase flame velocity measurement using laser-induced incandescence particle image velocimetry (LII-PIV)", *Proceedings of the Combustion Institute*.

Nishida, Robert, Tyler Johnson, Joshua S Hassim, Brian Graves, Adam M. Boies, and Simone Hochgreb (Jan. 2020). "A simple method for measuring fine-to-ultrafine aerosols using bipolar charge equilibrium", *ACS Sensors*.

Rodrigues, Jocelino, Andrea Busseti, and Simone Hochgreb (2020). "Numerical investigation on the generation, mixing and convection of entropic and compositional waves in a flow duct", *Journal of Sound and Vibration* 472, p. 115155.

Tian, B., A.X. Liu, C.T. Chong, L. Fan, S. Ni, J.-H. Ng, S. Rigopoulos, K.H. Luo, and S. Hochgreb (2020). "Experimental and numerical study on soot formation in laminar diffusion flames of biodiesels and methyl esters", *Proceedings of the Combustion Institute*.

Xu, Jingyuan, Jianying Hu, Yanlei Sun, Huizhi Wang, Zhanghua Wu, Jiangfeng Hu, Simone Hochgreb, and Ercang Luo (2020). "A cascade-looped thermoacoustic driven cryocooler with different-diameter resonance tubes. Part II: Experimental study and comparison", *Energy*, p. 118232.

Xu, Jingyuan, Ercang Luo, and Simone Hochgreb (2020). "Study on a heat-driven thermoacoustic refrigerator for low-grade heat recovery", *Applied Energy* 271, p. 115167.

Zhang, Cen, Bo Tian, Cheng Tung Chong, Boning Ding, Luming Fan, Xin Chang, and Simone Hochgreb (2020). "Synthesis of single-walled carbon nanotubes in rich hydrogen/air flames", *Materials Chemistry and Physics*, p. 123479.

2019 Breitegger, Philipp, Mario A. Schriefl, Robert T. Nishida, Simone Hochgreb, and Alexander Bergmann (2019). "Soot mass concentration sensor using quartz-enhanced photoacoustic spectroscopy", *Aerosol Science and Technology* 0.0, pp. 1–5. eprint: https://doi.org/10.1080/02786826.2019.1635677.

De Domenico, F, E O Rolland, and S Hochgreb (2019). "A generalised model for acoustic and entropic transfer function of nozzles with losses", *Journal of Sound and Vibration* 440, pp. 212–230.

Domenico, Francesca De, Thibault F. Guiberti, Simone Hochgreb, William L. Roberts, and Gaetano Magnotti (2019a). "Temperature and water measurements in flames using 1064 nm Laser-Induced Grating Spectroscopy (LIGS)", *Combustion and Flame* 205, pp. 336–344. eprint: https://doi.org/10.1016/j.combustflame.2019.04.016.

Domenico, Francesca De, Thibault F. Guiberti, Simone Hochgreb, William L. Roberts, and Gaetano Magnotti (Oct. 2019b). "Tracer-free laser-induced grating spectroscopy using a pulse burst laser at 100 kHz", *Opt. Express* 27.22, pp. 31217–31224.

Fan, Luming and Simone Hochgreb (2019). "Uncertainty analysis in Structured Laser Illumination Planar Imaging (SLIPI) applied to non-linear signals: gas-phase phosphor thermometry", *Measurement Science and Technology* 30, p. 084003.

Nishida, R. T., T. J. Johnson, A. M. Boies, and S. Hochgreb (2019). "Measuring aerosol active surface area by direct ultraviolet photoionization and charge capture in continuous flow", *Aerosol Science and Technology* 53.12, pp. 1429–1440. eprint: https://doi.org/10.1080/02786826.2019.1661958.

Nishida, R. T., N. M. Yamasaki, M. A. Schriefl, A. M. Boies, and S. Hochgreb (2019). "Modelling the effect of aerosol polydispersity on unipolar charging and measurement in low-cost sensors", *Journal of Aerosol Science* 130, pp. 10–21.

Nivarti, G. V., R. S. Cant, and S. Hochgreb (2019). "Reconciling turbulent burning velocity with flame surface area in small-scale turbulence", *Journal of Fluid Mechanics* 858, R1.

Tian, B., C.T. Chong, L. Fan, J.-H. Ng, C. Zhang, and S. Hochgreb (2019). "Soot volume fraction measurements over laminar pool flames of biofuels, diesel and blends", *Proceedings of the Combustion Institute* 37.1, pp. 877–884.

Weller, L., F. R. Smail, J. A. Elliott, A. H. Windle, A. M. Boies, and S. Hochgreb (2019). "Mapping the parameter space for direct-spun carbon nanotube aerogels", *Carbon*.

Weller, Lee, Maxim Kuvshinov, and Simone Hochgreb (Apr. 2019). "Gas-phase Raman spectroscopy of non-reacting flows: comparison between free-space and cavity-based spontaneous Raman emission", *Appl. Opt.* 58.10, pp. C92–C103.

2018 De Domenico, Francesca, P Shah, B. A. O. Williams, P. Ewart, Steven M Lowe, L. Fan, and S. Hochgreb (2018a). "High Frequency Measurement of Temperature and Composition with LITGS", *Journal of Engineering for Gas Turbines and Power* 141.3, p. 031003.

Fan, L, D McGrath, C T Chong, M N Mohd Jaafar, H Zhong, and S Hochgreb (2018). "Laser-induced incandescence particle image velocimetry (LII-PIV) for two-phase flow velocity measurement", *Experiments in Fluids* 59.10, p. 156.

Hayakawa, Akihiro, Tomohisa Yamagami, Kiyonori Takeuchi, Yasuhiro Higuchi, Taku Kudo, Steven Lowe, Yi Gao, Simone Hochgreb, and Hideaki Kobayashi (2018). "Quantitative measurement of temperature in oxygen enriched CH4/O2/N2 premixed flames using Laser Induced Thermal Grating Spectroscopy (LITGS) up to 1.0 MPa", *Proceedings of the Combustion Institute*.

Hochgreb, S (2018). "Mind the gap: Turbulent combustion model validation and future needs", *Proceedings of the Combustion Institute*.

Luers, A., A-L. Sahlberg, S. Hochgreb, and P. Ewart (2018). "Flame thermometry using laser induced grating spectrosopy of nitric oxide", *Applied Physics B* 143.0, p. 124.

Nishida, R T, A M Boies, and S Hochgreb (2018). "Measuring ultrafine aerosols by direct photoionization and charge capture in continuous flow", *Aerosol Science and Technology* 52.5, pp. 546–556.

Taveau, J, S Hochgreb, S Lemkowitz, and D Roekaerts (Jan. 2018). "Explosion hazards of aluminum finishing operations", *Journal of Loss Prevention in the Process Industries* 51, pp. 84–93.

Taveau, Jérôme, Saul Lemkowitz, Simone Hochgreb, and Dirk Roekaerts (2018). "Dust Explosion Propagation in Small Diameter Pipes", *Process Safety Progress*. eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1002/prs.12033.

Tian, B., Y. Gao, C. Zhang, and S. Hochgreb (2018). "Soot measurement in diluted methane diffusion flames by multi-pass extinction and laser-induced incandescence", *Combustion and Flame* 192, pp. 224–237.

2017 Afzalabadi, A, A K Poorfar, M Bidabadi, H Moghadasi, S Hochgreb, A Rahbari, and C Dubois (Sept. 2017). "Study on hybrid combustion of aero-suspensions of boron-aluminum powders in a quiescent reaction medium", *Journal of Loss Prevention in the Process Industries* 49, pp. 645–651.

Balusamy, S, L K B Li, Z Han, and S Hochgreb (Jan. 2017). "Extracting flame describing functions in the presence of self-excited thermoacoustic oscillations", *Proceedings of the Combustion Institute* 36, pp. 3851–3861.

Chong, C T and S Hochgreb (Jan. 2017). "Flame structure, spectroscopy and emissions quantification of rapeseed biodiesel under model gas turbine conditions", *Applied Energy* 185, pp. 1383–1392.

De Domenico, F, E O Rolland, and S Hochgreb (Apr. 2017a). "Detection of direct and indirect noise generated by synthetic hot spots in a duct", *Journal of Sound and Vibration* 394, pp. 220–236.

Fan, L, Y Gao, A Hayakawa, and S Hochgreb (Apr. 2017). "Simultaneous, two-camera, 2D gas-phase temperature and velocity measurements by thermographic particle image velocimetry with ZnO tracers", *Experiments in Fluids* 58.

Goldsborough, S S, S Hochgreb, G Vanhove, M S Wooldridge, H J Curran, and C J Sung (Jan. 2017). "Advances in rapid compression machine studies of low- and intermediate-temperature autoignition phenomena", *Progress in Energy and Combustion Science* 63, pp. 1–78.

Kamal, M M, B Coriton, R Zhou, J H Frank, and S Hochgreb (Jan. 2017). "Scalar dissipation rate and scales in swirling turbulent premixed flames", *Proceedings of the Combustion Institute* 36, pp. 1957–1965.

Nishida, R T, A M Boies, and S Hochgreb (Jan. 2017). "Modelling of direct ultraviolet photoionization and charge recombination of aerosol nanoparticles in continuous flow", *Journal of Applied Physics* 121.2.

Rolland, E O, F De Domenico, and S Hochgreb (2017a). "Direct and indirect noise generated by entropic and compositional inhomogeneities", *Journal of Engineering for Gas Turbines and Power* 17, p. 1458.

Rolland, E O, F De Domenico, and S Hochgreb (May 2017c). "Theory and application of reverberated direct and indirect noise", *Journal of Fluid Mechanics* 819, pp. 435–464.

Taveau, J R, J E Going, S Hochgreb, S M Lemkowitz, and D J E M Roekaerts (Jan. 2017). "Igniter-induced hybrids in the 20-l sphere", *Journal of Loss Prevention in the Process Industries* 49, pp. 348–356.

Tian, B, C Zhang, Y Gao, and S Hochgreb (2017). "Planar 2-color time-resolved laser-induced incandescence measurements of soot in a diffusion flame", *Aerosol Science and Technology* 51.12, pp. 1345–1353.

2016 Bidabadi, M, M Mohebbi, AK Poorfar, S Hochgreb, CX Lin, SA Biouki, and M Hajilou (Sept. 2016). "Modeling quenching distance and flame propagation speed through an iron dust cloud with spatially random distribution of particles", *Journal of Loss Prevention in the Process Industries* 43, pp. 138–146.

Chong, C T, S S Lam, and S Hochgreb (2016). "Effect of mixture flow stratification on premixed flame structure and emissions under counter-rotating swirl burner configuration", *Applied Thermal Engineering* 105, pp. 905–912.

Tsui, HP, MM Kamal, S Hochgreb, and WK Bushe (Mar. 2016). "Direct comparison of PDF and scalar dissipation rates between LEM simulations and experiments for turbulent, premixed methane air flames", *Combustion and Flame* 165, pp. 208–222.

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