



**The Combustion Institute**

5001 Baum Boulevard, Suite 644  
Pittsburgh, Pennsylvania 15213-1851 USA  
Ph: (412) 687-1366  
Office@CombustionInstitute.org

Fax: (412) 687-0340  
CombustionInstitute.org

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**Simone Hochgreb**

*Candidate, 2016 CI Board of Directors*

**Reasons for Nomination**

My career in combustion has spanned several locations, two continents, and a number of areas, including chemical kinetics, engines, gas turbines, and application of laser diagnostics. Since coming to Cambridge, I have served in the UK Section after being elected, eight of those years as secretary of the section, and still as co-opted website and newsletter manager. I have worked as organizer and chair of a number of workshops, conferences and networks, both within and outside Europe, in the engine and gas turbine industry associations, and served on just about every award and conference committee associated with the UK section and the International Combustion Symposium. In particular, I served in the committee which proposed a number of recommendations to promote the reform of the regulations of the Combustion Institute in 2014, which introduced a open voting system and overseeing the elections of the Board members.



*Simone Hochgreb*

As a Board Member, I would like to promote continued openness and transparency, the participation of young members, and the effective dissemination of the science in a world where combustion is a key issue on climate and the environment, and in which the Institute has an important responsibility in acting for the public good.

*See next page(s) for candidate's curriculum vitae.*

<b>Contact</b>	<p>Department of Engineering          Trumpington St, Cambridge, CB2 1PZ, UK          Email: <a href="mailto:simone.hochgreb@eng.cam.ac.uk">simone.hochgreb@eng.cam.ac.uk</a>          Phone: +44(0)1223 764098          Web: <a href="http://www.eng.cam.ac.uk/~sh372">http://www.eng.cam.ac.uk/~sh372</a>, <a href="http://www-g.eng.cam.ac.uk/reactingflows/">http://www-g.eng.cam.ac.uk/reactingflows/</a></p>
<b>Birthdate</b>	24 July 1962
<b>Citizenship</b>	USA, Brazil
<b>Expertise</b>	<p>Fluid mechanics and reacting flows, with a focus on the development and application of experimental methods and optical diagnostics. Extensive experience in chemical kinetic experimentation and modelling to applications in internal combustion 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 combustion instabilities.</p>
<b>Education</b>	<p>PhD, Mechanical and Aerospace Engineering, Princeton University, 1991,          B.Sc., Mechanical Engineering, University of São Paulo, 1985</p>
<b>Positions</b>	<p>Professor, University of Cambridge, 2002-present          Visiting Professor, Instituto Tecnológico da Aeronáutica (ITA), Brazil (2014-2016)          Managing Engineer, Exponent, 2000-2002          Principal Investigator, Sandia National Laboratories, 1999-2000          Associate Professor, Massachusetts Institute of Technology, 1996-1999          Assistant Professor, Massachusetts Institute of Technology, 1991-1996</p>
<b>Awards</b>	<p>IoP Best Combustion Dissertation Award (Sweeney, 2013)          Fellow Royal Aeronautical Society (2011)          Royal Society Wolfson Merit Award (2003)          Society of Automotive Engineers Ralph R. Teetor Award (1996)          General Electric Career Development Award (1993)          Bradley Career Development Award (1991)          Engineering Council Award for Excellence in Teaching, Princeton University (1989)          Foundation for the Advancement of Scientific Research of the State of São Paulo Award (1989)          Guggenheim Fellowship (1986), American Association for University Women (1986)</p>
<b>Research Highlights</b>	<p><i>Structure of turbulent flames.</i> Highly resolved scalar and velocity measurements for understanding the underlying microstructure structure of premixed and stratified flames. Collaboration with Sandia National Laboratories and TU Darmstadt. Structure of coal flames using LIF and PIV imaging.</p> <p><i>Combustion Instabilities.</i> Understanding how reactant non-uniformity affects flame response and origin of entropy spots. Interaction of self-excited and forced instabilities.</p> <p><i>High-pressure combustion facility.</i> Development and commissioning of a high pressure, high temperature (10 bar, 600 °C, 1 kg/s) combustion facility, with capabilities for thermoacoustic excitation of full size engine lean direct injector nozzles.</p> <p><i>Altitude relight visualization.</i> 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</p>

survival and transport.

*Combustion of biofuels.* The laminar flame speeds of rapeseed and palm based biofuels and the sensitivity to strain determined using the wall impingement technique, and compared to existing and new models. Measurements of the behaviour of biofuels in heated spray flames.

<b>Professional Activities</b>	<p>Member, Advisory Board, Sandia National Laboratories Combustion Research Facility (2012-present)</p> <p>Member, Tsuji Young Investigator Award Committee, The Combustion Institute, 2015.</p> <p>Member, Silver Medal Award Committee, The Combustion Institute, 2015.</p> <p>Member, Gold Medal Award Committee, The Combustion Institute, 2014.</p> <p>Session Chair, Gordon Conference on Laser Diagnostics in Combustion, 2011, 2013.</p> <p>Chair, Gold Medal Nomination Committee, The Combustion Institute, 2012.</p> <p>Hon. Secretary, Combustion Institute, British Section, (2008-2013)</p> <p>Chair, International Advisory Board, SICEC (Swedish Internal Combustion Engine Consortia (2011-2012)</p> <p>Chair, International Advisory Board, CERC (Chalmers Engine Research Center) (2006-2012)</p> <p>Chair, International Advisory Board, CICERO (KTH Center for Engine and Turbomachinery Research) (2008-2010)</p> <p>Papers Chair, International Combustion Symposium, Gas turbines and IC engines program (2012).</p> <p>Chair and Organizer, Combustion Institute, British Section Meeting, <i>Combustion in Gas Turbines: Present and Future Challenges</i>, Cambridge, 2010.</p> <p>Chair and Organizer, Combustion Institute, British Section Meeting, <i>Dilute Combustion</i>, Cambridge, 2006.</p> <p>Royal Society MP-Scientist Pairing Scheme, Nov 20-24 (2006)</p> <p>Member, National Research Council Committee on Carbon Monoxide Episodes in Meteorological and Topological Problem Areas (2001-2003)</p> <p>Society of Automotive Engineers, Horning Award Committee (selection of best paper of the Fuels and Lubricants Conferences) (1999-2002)</p> <p>Member, National Research Council Review Panel on the Partnership for a New Generation of Vehicles (1996-1998)</p> <p>Member, National Research Council Review Panel: Toxicological and Performance Aspects of Oxygenated Motor Fuels (1996)</p> <p>Member, Combustion Institute, 1988-present</p> <p>Society of Automotive Engineers, 1991-present</p> <p>American Institute of Aeronautics and Astronautics, 1991-present</p> <p>American Society of Mechanical Engineers, 1991-present</p>
<b>Recent Invited Lectures</b>	<p>Oxyflame First International Workshop, Probing the structure of turbulent pulverized coal flames: a review of non-intrusive methods, <i>Montabaur, Germany</i>, 10-11 Feb, 2016.</p> <p><i>Combura Workshop, Still burning after all these years: better, cleaner, and less</i>, Soesterberg, 7-8 October 2015.</p> <p>Gordon Conference in Laser Diagnostics for Combustion, <i>Experiments are from Mars, Computations are from Venus</i>, Waterville Valley, 9-13 August 2015.</p> <p><i>SPEIC2014, Making Sense of Measurements in Instabilities and Turbulent Flames</i>, 19-21, November, Lisbon, 2014.</p> <p><i>Understanding real flames through high pressure experiments</i>, Clean Combustion Workshop, KAUST, Saudi Arabia, 17-19 February, 2014.</p> <p><i>Measurements in Thermoacoustic Systems</i>, TANGO Network Lecture Series, IIT Bangalore, Chennai, India, 4-7 Feb 2014.</p> <p><i>The Structure and Dynamics of Stratified Turbulent Flames</i>, Keynote Talk, ECM, Lund, June 2013</p>