

2020 Australia and New Zealand Section of The Combustion Institute Report

Section Website: <https://protect-au.mimecast.com/s/GGIIICZY1NqiznyxVizY3OS?domain=anz-combustioninstitute.org>
Section Chair: Assaad Masri

Section officers and board members with titles:

Professor A.R. Masri, University of Sydney, Chair
Professor B.B. Dally, University of Adelaide, Deputy Chair
A/Professor Yi Yang, University of Melbourne, Secretary
Professor E. Hawkes, University of New South Wales, Treasurer
Professor G.J. Nathan, University of Adelaide
Professor D.K. Zhang, University of Western Australia
Professor A. Klimenko, University of Queensland, co-opted member
Professor S. Pang, University of Canterbury, co-opted member

Members of the Australia and New Zealand Section:

Active Members	65
Non-Student Members	39
Student Members	26

Section meetings and workshops since 2018:

- 5 December 2019
- Australian Combustion Symposium, 4-6 December 2019, Attended by 70 registrants a third of them are students.
- The following keynote and invited lectures were presented:
 - Bilger Lecturer: Professor Epaminondas Mastorakos, University of Cambridge, UK. Recent developments in turbulent combustion modelling and laser-based experiments and their relevance to practical systems
 - Keynote Speaker: Professor Bogdan Z. Dlugogorski, Charles Darwin University. Flammability of Hydrogen Sulfide (H₂S) and Carbon Disulfide (CS₂) – Review of Present Insights into Reaction Mechanisms
 - Keynote Speaker: Professor Mara de Joannon, Istituto di Ricerche sulla Combustione IRC-CNR, Italy. Stability of MILD Combustion in temperature tailored reactors - A perspective on thermal conversion of energy carriers
 - Technical Talk: Dr Agisilaos Kourmatzis, University of Sydney. Recent Progress in the Control and Understanding of Turbulent Spray Formation
 - Technical Talk: Dr Anand Veeraragavan, The University of Queensland. Supersonic Ethylene Combustion – Revamping the Cavity
 - Technical Talk: A/Prof. Andrew Wandel, University of Southern Queensland. A Physical Understanding of how Multiple Mapping Conditioning Works
 - Technical Talk: Prof. Heinz Pitsch, RWTH Aachen University. Soot Formation in Flames
 - Technical Talk: Dr Mohsen Talei, The University of Melbourne. Sound sources in premixed flames
 - Technical Talk: Dr Robert Gordon, The University of Melbourne. Industrial Gas Turbine Combustor Design: Exhaust CO Emissions

- Technical Talk: Prof. Shawn Kook, University of New South Wales. Combustion strategies for multi-fuel capable compression ignition engines
- Technical Talk: A/Prof. Vincent Wheatley, The University of Queensland. The Dynamics of Supersonic Turbulent Combustion

Other Activities:

- The ANZ-CI Section ran a very successful Summer School in December 2018. The First Australian Combustion Summer School (ACSS-2018) was held at The University of Sydney during the period 16-21 December 2018. It was attended by 73 scholars from twelve countries including 44 from Australia and 29 from overseas. The theme of the Summer School was maintained intentionally broad given the wide range of backgrounds of attendees. Lectures spanned a variety of topics from fundamentals such as chemical kinetics to applications such as fire suppression, engines, turbines and micro-reactors. Further details are provided in the full program. Over five days, the technical program of ACSS-2018 included twelve two-hour lectures delivered by an outstanding team of speakers including Professor Hai Wang from Stanford University and Dr Ruud Eggels from Rolls Royce. Each lecture allowed ample time for discussion and the involvement of attendees was extensive.

Awards:

- The Best Student Paper Prizes valued at \$200 each were awarded to:
 - Mr Dongchan Kim (University of New South Wales) For paper: ACS-002 Title: In-cylinder and exhaust soot morphology in an optical spark ignition direct injection (SID) petrol engine. Authors: D. Kim, S. Kook
 - Mr Esmaeel Eftekharian (Western Sydney University) For paper: ACS-021 Title: Numerical Analysis of Point Source Fire on Fire-Wind Enhancement. Authors: E. Eftekharian, F. Salehi, Y. He, K.C. S. Kwok,
 - Mr Tushar Ahmed (University of Sydney) For paper: ACS-011 Title: Initial Characterisation of a hybrid air-blast and electrostatic atomizer for spray combustion. Authors: T. Ahmed, A. Kourmatzis, A.R. Masri

Special Achievements:

- The ANZ-CI Section has introduced the Bilger Early Career Award to recognise outstanding early career researchers who are active members of the Australia and New Zealand Section of the Combustion Institute (ANZ-CI) and who have made a significant contribution to advance their field of research, which should fall under the broad umbrella of fundamental or applied combustion or combustion-related fields. One Award will be made once every two years only if a sufficiently strong application is received. The awardee will receive AUD\$500 and the presentation of the Award will take place at the biennial Australian Combustion Symposia. The Bilger Early Career Researcher Award was established in recognition of Professor Robert Bilger's seminal contributions to combustion science which include, but are not limited to, the conditional moment closure approach which is now adopted by many researchers worldwide to model finite-rate chemistry effects in turbulent flames.
- Members of the ANZ-CI Section have also attended the 12th Asia Pacific Conference on Combustion (ASPACC) which was held in Fukuoka, 1-5 July 2019. The ANZ-CI section has awarded 11 travel grants at \$300 each to assist delegates attend the conference. Professor Evatt Hawkes has presented an invited Keynote Lecture at that conference. The ANZ-CI Section plays a leading role in the organization and management of ASPACC conferences.