

## **A Brief History of the Canadian Section, The Combustion Institute**

Canada has significant reserves of fuel and forest resources and an active presence in the global energy production and utilization sectors. With these come a large variety of issues related to combustion efficiency, fire and explosion safety and combustion-generated pollution. From coal to crude oil, natural gas to tar sands, forest reserves to manufacturing operations and winter climates to rural villages, there are many challenging problems to be addressed by the Canadian combustion community. Therefore, it is important to advance and encourage multi-faceted combustion research in Canada, since it has the potential to yield significant and lasting economic and social benefits to the country. In recognition of these needs, the Canadian Section of the Combustion Institute was formed in 1954 and has fostered and served the combustion research community for the past 50 years.

The Canadian Section of the Combustion Institute was formed after the 1954 International Combustion Symposium in Pittsburgh upon the advice of Dr. E.W.R. Steacie, then President of the National Research Council of Canada. It was established to provide opportunities for networking amongst Canadian combustion researchers from industry, government and academia, as well as to provide a forum for intellectual stimulation and the exchange of ideas in the context of Canadian combustion needs. From its beginnings, the Canadian Section encouraged the participation of established and student researchers alike, a tradition that is still upheld today.

For the first 21 years, the workings of the Canadian Section were very well managed by Professor Lloyd A. Thompson of McGill University, with the able assistance of Diana Steiner. Most of the early technical meetings were held in conjunction with the Canadian Society of Chemical Engineers, as special sessions dealing specifically with combustion-related topics and applications. During these early years, the fledgling Canadian Section hosted two larger technical meetings of the Eastern Section of the Combustion Institute and was very active in the International Symposia. The Section's most notable paper was given in 1964, at the 10th Symposium on Combustion, when Canadian Nobel Laureate John Polanyi (Chemistry 1986) presented a paper with Dave Snelling on hydrogen-halogen reaction chemistry (Vol.10, pp.403-409, 1965). This is one of the only Combustion Symposia papers ever authored or co-authored by a Nobel Laureate. From its small beginnings, the Canadian Section had grown to over 35 members by 1975. It was time to launch an independent organization with its own governance and technical meetings.

Also in the early 1970's the energy crisis hit, giving rise to a significant increase in issues relating to fuels and energy in the Canadian context. This further prompted the Canadian Section to expand its role in mobilizing the combustion community by formalizing and intensifying its activities. At a general meeting of the members in Montreal, the newly formed Canadian Section elected their first Board of Directors with Prof. Henry Becker of Queen's University serving as Chair from 1975 until 1981. This first Board included many distinguished members of the combustion research community: Profs. Tom Brzustowski (Vice-Chair), Frank Steward, Ghazi Karim and John Dove, with Dr. Robert

Sandri as Secretary and Dr. Gerry Penner as Treasurer. Under Henry Becker's tenure, the operating principles for the Board of Directors were formally established, by-laws and aims for the section were drafted, and a newsletter and annual technical meetings of the Section were instituted. The first independent Canadian Section meeting was held in 1977 in Banff, Alberta with 21 papers in theoretical and applied combustion. It is interesting to note that, at this time membership fees were very reasonable - only \$4.00 per year! For his outstanding service to the Canadian Section of the Combustion Institute, Henry Becker received the Section Distinguished Service Award in 1988.

In 1980, the Canadian Section hosted the 18th International Symposium on Combustion at the University of Waterloo under the able leadership of Tom Brzustowski and colleagues. This symposium drew over 800 attendees with an active program in topics ranging across the breadth of combustion science and its applications. Unlike previous symposia, complete manuscripts had to be submitted for consideration at this symposium, a poster session for work in progress was piloted and invited lectures, selected to maximize attendance, were presented at the beginning of each day before the parallel sessions began. Many aspects of this format have persisted to the present International Symposia. What many attendees will recall, however, was the unique lighting system with green lights for most papers, but yellow then red lights to illuminate more long-winded speakers. Using this system, the many parallel sessions around the UW campus were kept to a very tight schedule. Tom Brzustowski received a Distinguished Service Award in 1989 for his longstanding contributions to the Canadian combustion research community.

In the period between 1975 and 1990, membership in the Canadian Section nearly tripled, from the original 35 members to close to 100 members. The fees similarly increased from \$4.00 to a still very reasonable \$7.50 per year. The level of activity in the Section intensified and its international reputation grew under the able stewardship of Henry Becker, Professor Frank Steward of the University of New Brunswick (1981 – 1985) and Professor Doug Dale of the University of Alberta (1985 – 1989). Other Board members during this period included Bernie Weichula, George Lee, John Wong, Jack Odgers, Jim Wallace, Mike Bardon, Phil Hill, Detlef Kretschmer, Deniz Karman and Kannan Tennakore.

Doug Dale established the Distinguished Service Awards, re-instituted Section newsletters and focussed additional attention on expanding combustion research and educational activities across Canada. The first survey of combustion laboratories and experimental facilities was completed in 1983 and Detlef Kretschmer was tasked with documenting the growing number of university courses relevant to the Canadian combustion community. Indeed, during this time, the Section thrived in pursuit of its aims:

- 1) expanding and enabling attendance at its annual technical meetings, as well as at the International Symposia
- 2) encouraging dissemination of research results and knowledge
- 3) stimulating combustion education through university-based and professional development courses
- 4) drawing attention to issues in combustion science and applications that were of

- particular interest in Canada and
- 5) cooperating with other government agencies, industry, universities and any interested parties in development and application of combustion science in Canada or internationally.

Annual technical meetings of the Canadian Section continued in venues throughout the country and, in 1986, Ghazi Karim and Doug Dale were instrumental in establishing the first joint meetings with the Western States Section of the Combustion Institute in the lovely western mountain venue of Banff, Canada (1986 and 1990). These latter meetings opened the door for increasing representation of international researchers at the Spring Technical Meetings of the Canadian Section, a trend that continues today.

Over the next decade, the Chairmanship of the Canadian Section passed to Professor Jim Wallace of the University of Toronto (1989 – 1992), followed by Dr. Ömer Gülder (1992 – 2001), then of the National Research Council of Canada, but currently a professor at the Institute for Aerospace Studies, University of Toronto. Other more recent members of the Board include Bob Evans, Mike Pegg, Dave Checkel, Andrzej Sobiesiak, Greg Smallwood, Paul Amyotte, Patric Ouellette and Janusz Kozinski. The Section has continued to grow to about 125 members with an ever-increasing number of student members. To encourage these students to become active members of the international combustion community, Ömer Gülder instituted a special student travel award to enable one or more students to attend and present a paper at the International Combustion Symposia. Also on the international front, Ömer Gülder is currently a very active member of the Board of Directors of the Institute, following in the footsteps of Henry Becker and John Lee who previously served in that capacity.

The Annual Spring Technical Meetings of the Canadian Section of the Combustion Institute continue to attract presentations in a broad variety of areas from combustion science to applied combustion systems. These alternate in a “west-central-east-central-west” pattern to ensure accessibility to Canadian researchers from all regions of the country. They have evolved to include 45-60 contributions per year, with an excellent mix of student, industrial, academic and government participants. The high quality of the contributions, low cost and somewhat informal flavour of these meetings are designed to encourage student participation and foster networking amongst the broader Canadian combustion community.