# **The Combustion Institute**

International, Non-Profit, **Educational and Scientific Society** 

# **Media Kit**



# **The Combustion Institute**

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#### **About The Combustion Institute**

The Combustion Institute is an international, non-profit, educational and scientific society. Founded in 1954, CI promotes and disseminates research activities in all areas of combustion science and technology for the advancement of many diverse communities around the world. The International Symposium on Combustion is its world congress and major biennial meeting.

The Combustion Institute directs the publication of two scientific journals, *Combustion and Flame*, published monthly and the *Proceedings of The Combustion Institute*, published biennially. Those publications and the affiliated journals, *Progress in Energy and Combustion Science*, *Combustion Science and Technology*, and *Combustion Theory and Modeling* link to all aspects of energy and combustion science both inside and outside the direct international combustion community.

The Combustion Institute also fosters a wide breadth of scientific activities, including regional scientific conferences, summer schools, lecture series, and stipend programs for early researchers. CI also maintains good relations with other scientific societies. Our international community is dedicated to combustion research as a field of eminent societal importance that cuts across many scientific and engineering disciplines.

For more information about The Combustion Institute, visit: CombustionInstitute.org.

# **About the International Symposia on Combustion**

The International Symposium on Combustion is the world congress and major biennial meeting of The Combustion Institute. Symposia provide combustion scientists, students, and practitioners around the world a scientific venue for sharing ideas and experiences on the development and applications of combustion science. Each symposium is open to anyone with interest in researching combustion occurrences.

Symposia are convened in varying host countries. Members of The Combustion Institute from sections submit bids to host each symposium, with support from the international organization headquartered in Pittsburgh, Pennsylvania, United States.

During the opening session of each symposium, participants attend the Hottel Lecture, named after the late Hoyt C. Hottel (1903–1998), professor in the department of Chemical Engineering at the Massachusetts Institute of Technology (MIT) and co-founder of The Combustion Institute. As the paramount plenary lecture of the symposium, a distinguished leader in a field of combustion is selected biennially to deliver a presentation.

Throughout symposium week, the offered sessions and events explore topics in multiple combustion colloquia. Participants are able to attend other plenary lectures, topical reviews, oral presentations, Work in Progress

Poster (WiPP) presentations, and sessions on industry perspectives. Before and after symposia, several one or two day satellite meetings are dedicated to specialized communities that convene in a discussion-friendly atmosphere.

The international combustion community also has the opportunity to establish new scientific collaborations and reignite lifelong associations. The Women in Combustion (WiC) coffee break provides women the opportunity to join together for a time to network and share their professional experiences. Young researcher mixers are organized for students and early career researchers within three years after earning a terminal degree. There are also several daily and nightly accompanying guest tours to savor the finer attractions of each host country.

The Combustion Institute hosts an awards ceremony during the banquet at each symposium. The international combustion community recognizes individuals who have made outstanding contributions with significant impact in combustion science. Awards bestowed include four Gold Medals, Silver Combustion Medals, Bernard Lewis Fellowships, and Hiroshi Tsuji Early Career Researcher Awards.

For more information about the International Symposium on Combustion, visit: CombustionSymposia.org.

#### 2016 to 2020 Executive Committee

Executive leadership of The Combustion Institute.

#### **President**

James F. Driscoll, University of Michigan, United States

#### **Vice President (President-Elect)**

Philippe Dagaut, CNRS-INSIS, ICARE, France

#### **Vice President for Sectional Affairs**

Hideaki Kobayashi, Tohoku University, Japan

#### **Treasurer**

Derek Dunn-Rankin, University of California, Irvine, United States

#### Secretary

L.P.H. de Goey, Eindhoven University of Technology, Netherlands

#### **Secretary for Sectional Affairs**

Fei Qi, Shanghai Jiao Tong University, China

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# **Programs of The Combustion Institute**

Educational programs, conferences, and meetings for the international combustion community.

#### The Combustion Institute-Summer Schools

The Combustion Institute-Summer Schools (CI-SS) initiative provides interested parties, mainly graduate students and postdoctoral researchers the opportunity to receive an intensive educational experience. Participants also meet world-leading scientists and work to build their own international network. The Combustion Institute, in cooperation with host organizations around the world, assemble CI-SS programs to harmonize and promote the global growth of combustion science and technologies.

CI-SS was established to promote scientific education that corresponds with the combustion-related needs of society. Programs can vary in duration, from a couple of days through a few weeks, based on educational goals. To preserve the freedom of scientific endeavors and encourage diversity, The Combustion Institute invites universities, sections, and other qualified organizations in multiple countries to host summer school programs in accordance with the defined policies.

The proven success of the CI-SS initiative continues to foster the next generation of combustion scientists. Reference the **Events Calendar** to find upcoming events. If your organization is interested in hosting a summer school program, download the **application guidelines**.

#### **Conferences and Meetings**

The Combustion Institute, in cooperation with sections, universities, and other organizations, host conferences and meetings for regional and international combustion communities. The biennial International Symposia on Combustion is the largest of such gatherings. Conferences are organized to provide scientists, students, and practitioners the opportunity to exchange ideas and disseminate advances in combustion science. Reference the Events Calendar to find upcoming events.

#### **Bernard Lewis Visiting Lecturers Fellowship**

The fellowship is named after Bernard Lewis (1899-1993), a founding member of The Combustion Institute. The purpose of the Bernard Lewis Visiting Lecturers Fellowship is to financially assist lecturers to cross the borders of their countries and visit institutions within a CI Section. The fellowship covers travel expenses to the visiting region and an honorarium for sharing expertise in combustion. CI associated institutions are encouraged to submit a proposal for a visiting lecturer. Visit the website to learn more.



#### **Publications of The Combustion Institute**

The Combustion Institute directs the publication of two scientific journals.

#### **Proceedings of The Combustion Institute**

The *Proceedings of The Combustion Institute* contains forefront contributions in fundamentals and applications of combustion science. For more than 50 years, The Combustion Institute has served as the peak international society for dissemination of scientific and technical research in the combustion field. In addition to author submissions, the *Proceedings of The Combustion* 

*Institute* includes the Institute's prestigious invited strategic and topical reviews that represent indispensable resources for emergent research in the field. All papers are subjected to rigorous peer review.

Research papers and invited topical reviews; Reaction Kinetics; Soot, PAH, and...*Learn More* 

#### **Combustion and Flame**

The mission of the journal is to publish high quality work from experimental, theoretical, and computational investigations on the fundamentals of combustion phenomena and closely allied matters. While submissions in all pertinent areas are welcomed, past and recent focus of the journal has been on:

Development and validation of reaction kinetics, reduction of reaction mechanisms and modeling of combustion systems, including: Conventional, alternative and surrogate fuels; Pollutants; Particulate and aerosol formation and abatement; Heterogeneous processes.

Experimental, theoretical...Learn More

The Combustion Institute also proudly acknowledges its affiliation with this leading journal in the energy and combustion field.

#### **Progress in Energy and Combustion Science**

Progress in Energy and Combustion Science (PECS) publishes review articles on all aspects of energy and combustion science, providing a comprehensive in-depth overview of a particular topic.

While *PECS* spans the broad field of energy science, it continues to focus particularly on the fields of

combustion and fuel science. Combustion has played an important role in the world's energy systems and will continue to do so in years to come. As time passes, technological demands evolve and change. For instance, the challenges we face today include conservation of energy, addressing the problem...Learn More

Other journals affiliated with The Combustion Institute include *Combustion Science* and *Technology* and *Combustion Theory and Modeling*.



# A Brief History of The Combustion Institute

The history leading to the establishment of The Combustion Institute reaches back to the early times of automotive engines, fuels, and aviation. With technological advances, engineering problems, and the need for fundamental understanding of combustion processes, scientists and practitioners in combustion-related fields gathered in 1928 for an initial conference. Affiliated with the American Chemical Society, the first combustion symposium convened in Swampscott, MA, United States. In this scientific venue participants shared ideas and experiences on the development and applications of combustion science.

A sequence of national and international combustion symposia held in the United States established links to an active international combustion community. During the International Symposium held in 1954 at the University of Pittsburgh, Bernard Lewis, Hoyt Hottel, and a number of other committed combustion scientists incorporated The Combustion Institute as a scientific society. The membership elected the first Board of Directors. Officers were selected, and the first business meeting was conducted to determine the scope and mission of the new institute.

Since its founding in 1954, The Combustion Institute has made a profound impact on the advancement of combustion science. Thirty-five CI Sections dedicated to combustion science in countries around the world have been established under the umbrella of The Combustion Institute. Our international community of combustion scientists and practitioners is dedicated to combustion research as an imperative field of study that cuts across many scientific and engineering disciplines.

As a non-profit, scientific and engineering society, The Combustion Institute promotes research activities in all areas of combustion science. Dissemination of research findings and education initiatives are conducted through the biennial International Symposium on



Combustion, regional and national conferences and meetings, the Combustion Institute Summer Schools, and through the publication of Cl's journals, *Combustion and Flame*, *Proceedings of The Combustion Institute*. Affiliated journals include, *Progress in Energy and Combustion Science*, *Combustion Science and Technology* and *Combustion Theory and Modeling*.

The success of the biennial symposia is at the heart of The Combustion Institute's special character. These scientific venues fuel the presentation of the highest quality research. Each symposium includes plenary and topical lectures, oral presentations selected with critical peer review from full paper submissions, and Work in Progress Posters (WiPPs) from combustion scientists, students, and practitioners around the world. Participants are encouraged to pursue excellence in research, openness in presentations, and supportive criticism in evaluations as applied to the work of colleagues.

Over the decades, The Combustion Institute has grown in membership, scope of support for high-quality research, and stature. CI and its members have played a pivotal role in the advancement of the various scientific and technical disciplines that constitute the broad arena of combustion science. Our international community is proud of our history and dedicated to the betterment of humankind.

#### YouTube Video Introduction

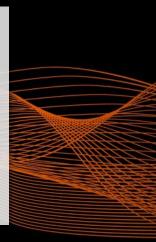
Watch The Combustion Institute YouTube videos to learn more about our mission and the International Symposia on Combustion.



Mission of The Combustion Institute



Introduction: The Combustion Institute



# A Brief History of Symposia

Timeline of the biennial International Symposia on Combustion.

: First symposium, affiliated with the American Chemical Society, United States.

: Symposium first organized by Bernard Lewis, affiliated with the American Chemical Society, United States.

: First international symposium. University of Wisconsin, United States.

: Massachusetts Institute of Technology (MIT), United States.

: Incorporation of The Combustion Institute announced. Board of Directors and officers elected. First business meeting. University of Pittsburgh, United States.

: Symposium first organized by The Combustion Institute. Yale University, United States.

: Symposium first conducted outside of the United States. First Bernard Lewis Gold Medal presented. First Alfred Egerton Gold Medal presented. First Silver Combustion Medal presented. Oxford University, UK.

: Symposium dedicated to Sir Alfred Egerton (1886-1959). California Institute of Technology (Caltech), United States.

1962: Cornell University, United States.

: Symposium dedicated to Bernard Lewis. University of Cambridge, UK.

: Retirement of Bernard Lewis as president of The Combustion Institute announced. University of California, Berkeley, United States

: University of Poitiers presented The Combustion Institute with the Flame to burn at each symposium. University of Poitiers, France.

: Science of combustion vs. environmental pollution introduced. University of Utah, United States.

1972: Pennsylvania State University, United States

1974: Toshi Center Hall, Japan.

: Massachusetts Institute of Technology (MIT), United States.

: 50th anniversary of first symposium. University of Leeds, UK.

: First Work in Progress Poster (WiPP) sessions introduced. University of Waterloo, Canada.

1982: Technion-Israel Institute of Technology, Israel

: 30th anniversary of The Combustion Institute. University of Michigan, United States

1986: Technical University of Munich, West Germany.

**1988**: Reading room introduced for accepted papers. University of Washington, United States.

: First Ya. B. Zeldovich Gold Medal presented. University of Orléans, France.

1992: University of Sydney, Australia.

: Symposium dedicated to Bernard Lewis (1899-1993) and Bernard Lewis Endowment Fund established. University of California, Irvine, United States.

1996: University of Naples Federico II, Italy.

: Symposium dedicated to Hoyt Hottel (1903-1998), co-founder of The Combustion Institute. Rebuttal process for papers initiated. University of Colorado Boulder, United States.

: First Bernard Lewis Fellowship recipients announced. University of Edinburgh, Scotland.

: Special technical session devoted to fire and explosive safety. Hokkaido University, Japan.

: 50th anniversary of the founding of The Combustion Institute. First international president elected. University of Illinois at Chicago, United States.

2006: University of Heidelberg, Germany.

: The Flame gifted from the University of Poitiers, France retired from use. McGill University, Canada.

2010: Tsinghua University, China.

: Warsaw University of Technology, Poland.

: Hyatt Regency Embarcadero of San Francisco, United States.

: First Jürgen Warnatz Gold Medal presented. First Hiroshi Tsuji Early Career Researcher Award presented. Coex Convention & Exhibition Center, Republic of Korea.

# **Colloquia Descriptions**

The Combustion Institute currently addresses 13 combustion colloquia categories.

**Gas-Phase Reaction Kinetics** including the kinetics of hydrocarbons and oxygenated fuels, formation of gaseous pollutants, elementary reactions, mechanism generation, reduction and uncertainty quantification.

**Soot, Nanomaterials, and Large Molecules** including the formation, growth, and destruction of soot, PAHs, carbon nanostructures, and other nanoscale materials.

**Diagnostics** including the development and application of diagnostic techniques and sensors for the understanding and control of combustion and reacting flow phenomena.

**Laminar Flames** including their ignition, structure, propagation, extinction, stabilization, dynamics, and instabilities.

**Turbulent Flames** including their ignition, structure, propagation, extinction, stabilization, dynamics, and instabilities, and modeling of turbulence chemistry interaction.

**Spray, Droplet, and Supercritical Combustion** including atomization, combustion of droplets, sprays, and supercritical fluids.

**Detonations, Explosions, and Supersonic Combustion** including flame acceleration, DDT, and pulse -detonation-, constant volume combustion-, and scramjet-engines.

**Solid Fuel Combustion** including fundamental aspects related to pyrolysis, oxidation, gasification, and ash formation from coal, biomass, and wastes, as well as combustion of propellants and metals.

**Fire Research** including fundamental aspects of ignition, burning, spread and suppression of fire, as well as applications to building fire and urban/wildland fire safety.

Stationary Combustion Systems and Control of Greenhouse Gas Emissions including combustion in stationary power generation, fluidized beds, incineration, utility boilers, industrial applications,  $NO_x$  and  $SO_x$ reduction, MILD combustion, oxy-fuel combustion, chemical looping, and  $CO_2$  capture.

**Internal Combustion Engines** including device-specific aspects of fuels research, emissions, direct injection, and combustion dynamics (e.g. ignition, quenching).

Gas Turbine and Rocket Engine Combustion including propulsion and power generation, as well as device-specific aspects of fuels research, emissions, stability, and combustion dynamics (e.g. ignition, quenching, and thermoacoustics).

**Other Concepts** including assisted combustion (plasmas, electric and magnetic fields), catalysis, fuel synthesis and transformation, micro-channel reactors, integrated process intensification, fuel cells, and electrolysis.



#### **Medals and Awards**

The Combustion Institute recognizes individuals who have made an outstanding contribution and significant impact in combustion science.

#### **Gold Medals**

Bernard Lewis Gold Medal is named after Bernard Lewis (1899-1993), a founding member of The Combustion Institute. As a physical chemist in the Chief Explosives and Physical Sciences Division of the U.S. Bureau of Mines in Pittsburgh, Pennsylvania, Lewis was a pioneer in theoretical and experimental combustion research. In this position Lewis directed research in combustion, flames, explosions, and explosives. Lewis' lifetime of work and his passion to help young scientists shaped the modern field of combustion research.

Alfred C. Egerton Gold Medal is named after Sir Alfred C. Egerton (1886-1959), the first chairman of the British Section of The Combustion Institute. As a professor at the Imperial College of Science and Technology, Egerton was an acknowledged leader in Britain among scientists engaged in research in the field of combustion, explosions, and flame. In his later career, Egerton devised with his students, a flat-flame burner configuration that advanced flame measurements under ideal conditions for combustion scientists around the world.

Ya. B. Zeldovich Gold Medal is named after Yakov Borisovich Zeldovich (1914-1987), a pre-eminent Soviet physicist. His far-reaching scientific achievements spanned many fields ranging from physical chemistry to nuclear and particle physics, and finally astrophysics and cosmology. Zeldovich worked on the theory of ignition, combustion, and detonation. He achieved important results in the theory of nuclear chain reactions. He also discovered an oxidation of nitrogen mechanism, known in physical chemistry as Thermal NO Mechanism or the *Zeldovich Mechanism*.

Jürgen Warnatz Gold Medal is named after Professor Jürgen Warnatz (1944-2007), a former managing director of the Interdisciplinary Center for Scientific Computing (IWR) at Ruprecht Karls University, Heidelberg, Germany. He also served as a chair of the German Section of The Combustion Institute. Warnatz pioneered a research approach on modeling and simulation of chemical reactive flows, particularly looking at the molecular reactions involved and transport processes. His life's work and publications influenced the application of combustion science around the world.

#### Other Awards

Silver Combustion Medal recognizes an outstanding distinguished paper from the previous International Symposium on Combustion. A distinguished paper selected for this honor exemplifies quality, achievement, and significance to advance a field of combustion science. First presented in 1958, at Oxford University, UK, the Silver Combustion Medal is bestowed biennially to the authors of a winning paper during the International Symposium on Combustion.

Hiroshi Tsuji Early Career Researcher Award is cosponsored by Elsevier and The Combustion Institute. The award recognizes an early career researcher who has demonstrated excellence in fundamental or applied combustion science and has achieved a significant advancement in their field within four to ten years of completing a doctoral degree or equivalent. The award is named after Professor Hiroshi Tsuji, whose stable porous cylinder counterflow burner configuration has influenced fundamental studies and applications in laminar and turbulent combustion.

Bernard Lewis Fellowship was established to encourage high quality research in combustion by young scientists and engineers. Fellowships are awarded biennially during the International Symposium on Combustion. Each recipient must be either a student or combustion scientist within three years of completing their last educational degree, an author and presenter of a paper accepted at the current symposium, and a member of The Combustion Institute.

**Distinguished Papers** are selected biennially from among the scientific papers presented during the International Symposium on Combustion and accepted for publication in the *Proceedings of The Combustion Institute*. One paper is selected for each represented colloquium as the most distinguished in quality, achievement, and significance.

# **Sections of The Combustion Institute**

There are currently 35 sections of The Combustion Institute around the world.

Adria Section	Greece Section	Republic of Korea Section
Australia/New Zealand Section	Hungary Section	Russian Federation Section
Belarus Section	India Section	Saudi Arabia Section
Belgium Section	Iran Section	Scandinavia - Nordic Section
Brazil Section	Ireland Section	Spain Section
Canada Section	Israel Section	Sweden Section
Chile Section	Italy Section	Taiwan Section
China Section	Japan Section	Turkey Section
Egypt Section	Mexico Section	United States Central States Section
France Section	Netherlands Section	United States Eastern States Section
Germany Section	Poland Section	United States Western States Section
Great Britain Section	Portugal Section	

# Membership

Members of The Combustion Institute tap into a valuable support network offered through International Symposia on Combustion, conferences and meetings, The Combustion Institute Summer Schools, and scientific publications. CI currently has a diverse membership of combustion scientists and practitioners from around the world, which include students, professors, industry leaders, private entrepreneurs, and civil services.

Visit The Combustion Institute website to learn more.

**CombustionInstitute.org** 



### **FAQs**

Frequently asked questions about The Combustion Institute.

What is The Combustion Institute? Founded in 1954, The Combustion Institute is an international, non-profit, educational and scientific society. CI promotes and disseminates research activities in all areas of combustion science for the advancement of many diverse communities around the world. The International Symposium on Combustion is our major biennial meeting. Visit The Combustion Institute website: CombustionInstitute.org.

What kind of programs does The Combustion Institute offer? Besides the biennial international symposia, CI offers several programs including, The Combustion Institute Summer Schools, and multiple combustion science conferences and meetings.

Does The Combustion Institute have scientific publications? Yes. CI directs the publication of two scientific journals, Combustion and Flame, published monthly and the Proceedings of The Combustion Institute, published biennially. Affiliated journals include, Progress in Energy and Combustion Science, Combustion Science and Technology, and Combustion Theory and Modeling.

Does The Combustion Institute bestow scientific awards? Yes. The international combustion community recognizes individuals who have made an outstanding contribution and significant impact in combustion science. Awards include four Gold Medals, the Silver Combustion Medal, several Bernard Lewis Fellowships, Distinguished Papers, and the Hiroshi Tsuji Early Career Researcher Award.

I'm a scientist in a related discipline. How can I join The Combustion Institute? CI is open to anyone with interest in researching combustion occurrences. Visit our membership page on the website to learn more.

Why is combustion important? Transportation and power generation rely to a large extent on combustion science. About two-thirds of the world's energy supply is combustion-generated. Manufacturing processes like steel and glass making use combustion energy. The development of engines for cars, trucks, ships and aircrafts, the design of micro-combustors and large-scale electrical power plants has its roots in combustion science. It is thus not surprising the International Symposia on Combustion started almost in synchronization with major advances in fuel and engine technologies in the late 1920s.

Is combustion only used to provide energy? Combustion science and technology are also important factors in fire

safety. Fundamental considerations and scientific advances in experimental and computation sciences permit deeper understanding needed for safety rules and procedures, and for the planning and construction of buildings and cities.

Is combustion in opposition to green energy initiatives? Absolutely not. Combustion science continuously pursues increasing efficiency to lower carbon outputs. This goal does not only pertain to transportation or power using combustion. Manufacturing processes for steel and glass for green technology use combustion energy. CI has also formed a colloquium that studies the formation and control of pollutants and greenhouse gases, including  $NO_x$  and  $SO_x$ , oxy-fuel combustion, chemical looping combustion and  $CO_2$  capture processes.

What is the International Symposium on Combustion? A biennial conference that provides combustion scientists, students, and practitioners around the world a scientific venue for sharing ideas and experiences on the development and applications of combustion science. Each symposium is open to anyone with interest in researching combustion occurrences. Visit the symposium website: CombustionSymposia.org.

What kind of symposium programs are offered? Each symposium opens with a welcome reception and the Hottel Lecture. Throughout the week, participants are able to attend sessions that explore 14 combustion colloquia, including plenary lectures, topical reviews, oral presentations, Work in Progress Poster (WiPP) presentations, and sessions on industry perspectives.

Who attends symposia? Each symposium is mainly targeted to combustion scientists, professors, students, practitioners, and anyone with interest in researching combustion occurrences.

Who organizes symposia? Each symposium is organized by the hosting section of The Combustion Institute, with support from the international organization headquartered in Pittsburgh, PA, United States.

Who should I contact if I have additional questions? Additional questions can be directed to the following:

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