

COMBUSTION WEBINAR

Hydrogen: A Seemingly Simple Fuel

Speaker: Heinz Pitsch, RWTH Aachen University

Time: Mar. 20th 2021

10 am EST; 3 pm Paris; 10 pm Beijing.

Zoom Meeting ID: 959 5515 8623

Passcode: combustion

Check <https://sun.ae.gatech.edu/combustion-webinar>

for details or directly contact wenting.sun@aerospace.gatech.edu



COMBUSTION
WEBINAR



Biography: Prof. Pitsch has been the Director of the Institute for Combustion Technology since 2010. His main research interests are in the fields of combustion theory, combustion chemistry, turbulence, and multi-phase flows with application to technical combustion systems. He has published over 200 papers in archival journals. He is a Fellow of the International Combustion Institute and the American Physical Society. In 2015, he has received the prestigious Advanced Research Grant of the European Research Council. For the recent 37th International Symposium on Combustion, he served as one of the two program co-chairs and he is co-editor in chief of the journal Applications in Energy and Combustion Science.

Abstract: The desired rise of electricity production from renewable energy sources increases the need for appropriate energy storage thus promoting the use of hydrogen as a carbon-free energy carrier. One way to integrate hydrogen into the existing energy infrastructure is its thermochemical energy conversion. However, several challenges arise for combustion processes that involve hydrogen. The combustion behavior of lean premixed hydrogen flames is significantly affected by flame-intrinsic instabilities, which substantially change flame dynamics, heat release rates, and flame speed. These aspects are particularly relevant for safety considerations to avoid flash back, but can be also exploited to increase thermal efficiencies. Here, we will discuss challenges and opportunities for hydrogen combustion using data from DNS and experiments with a focus on intrinsic flame instabilities and their interaction with turbulent combustion.

Combustion Webinar Organization Committees

Advisory Committee

Yiguang Ju (Princeton University)
Fei Qi (Shanghai Jiao Tong University)
Philippe Dagaut (CNRS-INSIS)
Gautam Kalghatgi (Univ of Oxford/Saudi Aramco)
Med Colket (UTRC, Retired)

Chung K. (Ed) Law (Princeton University)
Katharina Kohse-Höinghaus (University of Bielefeld)
Kaoru Maruta (Tohoku University)
Kelly Senecal (Convergent Science)
Toshiro Fujimori (IHI Inc.)

Technical Committee

Wenting Sun (Georgia Tech) **Chair**
Lorenz R Boeck (FM global)
Liming Cai (Tongji University)
Zheng Chen (Peking University)
Matthew Cleary (The University of Sydney)
Stephen Dooley (Trinity College Dublin)
Tiegang Fang (North Carolina State University)
Aamir Farooq (KAUST)
Michael Gollner (UC Berkeley)
Wang Han (The University of Edinburgh)
Jean-Pierre Hickey (U. Waterloo)
Xinyan Huang (Hong Kong Polytech Univ.)
Tai Jin (Zhejiang University)
Tina Kasper (University Duisburg-Essen)

Isaac Boxx (DLR) **Co-Chair**
Deanna Lacoste (KAUST)
Davide Laera (CERFACS)
Joseph Lefkowitz (Technion)
Qili Liu (Purdue University)
Yushuai Liu (IET, CAS)
Zhandong Wang (USTC)
Nicolas Noiray (ETH Zurich)
Guillermo Rein (Imperial College London)
Xingjian Wang (Florida Institute of Technology)
Jun Xia (Brunel University London)
Huahua Xiao (USTC)
Dong Yang (SUST)
Suo Yang (University of Minnesota)
Peng Zhao (University of Tennessee, Knoxville)

Disclaimer

- The presentation materials and comments made by the lecturer and participants are only for research and education purposes.
- All presentation materials are the sole properties of the lecturer and the Combustion Webinar organizer, and cannot be published and disseminated without written approvals from both parties.
- This lecture may be recorded and released to public.
- **Please use Chat or Raise Hand to ask your questions.**
- **Please turnoff microphone. Webinar will be locked after 30 minutes.**
- **Recorded lectures are on *Combustion Webinar YouTube Channel***
https://www.youtube.com/channel/UCSsO7e9VIn__RejSiAPF0JA