



**The Combustion Institute**

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## Links to CI Summer School (CI-SS) Lecture Notes from Past Sessions

### 2019 Cambridge Combustion Summer School:

- **Chemical Kinetics** by Dr. Alison Tomlin, University of Leeds, United Kingdom
- **Optical Diagnostics** by Dr. Robert Barlow, Sandia National Laboratories, United States
- **LES of Reacting and Non-Reacting Flows** by Dr. Bill Jones, Imperial College London, United Kingdom
- **DNS of Reacting Flows** by Dr. Jackie Chen, Sandia National Laboratories, United States
- **Modeling of Combustion in Reciprocating Engines** by Dr. Christian Hasse, TU Darmstadt, Germany
- **Fires** by Dr. Guillermo Rein, Imperial College London, United Kingdom

### 2019 Princeton CI-SS Lecture Notes:

- **Combustion Dynamics** by Prof. Sebastien M. Candel, Centrale-Supelec, France
- **Combustion Chemistry and Modeling** by Prof. Henry J. Curran, National University of Ireland, Galway, Ireland
- **Numerical Combustion**
  - **Part A: Computational Methods for Soot Formation** by Prof. Angela Violi, University of Michigan, United States
  - **Part B: Numerical Combustion from Fundamentals to Engine Applications** by Dr. Jackie Chen, Sandia National Laboratories, United States
- **Laser Diagnostics in Turbulent Combustion Research** by Prof. Jeffrey A. Sutton, Ohio State University, United States
- **Combustion Fundamentals of Fire Safety** by Prof. Jose L. Torero, University College London, United Kingdom

### 2018 Australian Combustion Summer School Lecture Notes:

- **Introduction to Combustion and its Modes** by Prof. Assaad R. Masri, The University of Sydney, Australia
- **Combustion Chemistry and Model Reduction** by Prof. Yi Yang, University of Melbourne, Australia
- **Soot Chemistry and the Evolution of Particles in Flames** by Prof. Hai Wang, Stanford University, United States
- **Flame Synthesis of Nanoparticles** by Prof. Hai Wang, Stanford University, United States
- **Combustion Modelling** by Dr. Ir. Ruud Eggels, Rolls-Royce Deutschland Ltd & co KG, Germany
- **Diagnostics for combustion** by Dr. Matthew J. Dunn, University of Sydney, Australia
- **Engine Combustion** by Prof. Sanghoon (Shawn) Kook, The University of New South Wales, Australia
- **Sprays Session (Spray Atomization, Combustion & Modelling)** by Dr. Agisilaos Kourmatzis and Prof. Matthew Cleary, University of Sydney, Australia
- **Gas turbine Combustion Modelling/Lean combustion and fuels** by Dr. Ir. Ruud Eggels and contributions by Dr. Thomas Doerr, Rolls-Royce Deutschland Ltd & co KG, Germany
- **Solid Fuel Combustion and Gasification** by Prof. G.J. 'Gus' Nathan, The University of Adelaide, Australia

- **Fire Dynamics and Suppression** by Prof. Vasily Novozhilov, Victoria University, Australia
- **Microcombustion and Catalytic Chemistry** by Prof. Brian Haynes, The University of Sydney, Australia

#### 2018 Princeton CI-SS Lecture Notes:

- **Combustion Theory and Applications in CFD** by Prof. Heinz Pitsch of RWTH Aachen University, Germany
- **Quantitative Laser Diagnostics for Combustion Chemistry and Propulsion** by Prof. Ronald K. Hanson of Stanford University, United States
- **Combustion Chemistry** by Prof. Michael J. Piling of University of Leeds, United Kingdom
- **Internal Combustion Engines**
  - *Part I: Fundamentals and Performance Metrics* by Prof. Rolf Reitz of University of Wisconsin at Madison, United States
  - *Part II: Perspectives of Future Engines and Fuels* by Dr. Gautam Kalghatgi of Saudi, Aramco, Saudi Arabia
- **Advanced Topics in Propulsion**
  - *Part I: Unsteady Combustor Processes* by Timothy C. Lieuwen of Georgia Institute of Technology, United States
  - *Part II: Combustion of Energetic Materials* by Prof. Richard A. Yetter of Pennsylvania State University, United States

#### 2018 KAUST Clean Combustion Summer School Lecture Notes:

- **Flame Fundamentals** by Prof. Kaoru Maruta of Tohoku University, Japan
- **Flame Fundamentals Parts I and II** by Prof. Hong G. Im of KAUST, Saudi Arabia
- **Engine Fundamentals Parts I and II** by Dr. Anthony Dean Part I of GE Global Research, United States
- **Fuel Fundamentals** by Prof. Aamir Farooq of KAUST, Saudi Arabia

#### 2017 Princeton CI-SS Lecture Notes:

- **Combustion and Fuels Chemistry and Kinetics** by Prof. W. H. Green of Massachusetts Inst of Technology, United States
- **Advanced Laser Diagnostics in Turbulent Combustion** by Prof. A. Dreizler of TU Darmstadt, Germany
- **Combustion Theory** by Prof. M. Matalon of U. of Illinois at Urbana Champaign, United States
- **Advanced Combustion Chemistry**
  - *Part A: Predictive Ab Initio Kinetics* by Dr. S.J. Klippenstein, Argonne Natl Lab, United States
  - *Part B: Mechanism Reduction and Advanced Chemistry Solvers* by Prof. T. Lu of U. of Connecticut, United States
- **Frontiers in Combustion Technologies**
  - *Part A: Plasma-Assisted Combustion* by Prof. Y. Ju of Princeton Univ., United States
  - *Part B: New Combustion Technologies –Promise and Progress* by Dr. G. A. Richards of Natl. Energy Tech. Lab, United States

#### The CI Summer School on Physics of Turbulent Combustion Lecture Notes:

- **Flame/turbulence interaction in low temperature combustion** by Dr. Jackie Chen of Sandia National Laboratories
- **Structure and dynamics of turbulent flames** by Prof. Philip de Goeij of Eindhoven University of Technology
- **Mathematical modeling of turbulent combustion** by Prof. Christer Fureby of Swedish Defense Research Agency
- **Intrinsic flame instability in turbulent flames** by Prof. Moshe Matalon of University of Illinois at Urbana-Champaign
- **Turbulent Combustion Regimes and Associated Diagrams: A Short-Guided Tour** by Prof. Arnaud Mura of University of Maryland
- **Flame/turbulence interaction in supersonic and detonation conditions** by Prof. Elaine Oran of University of Maryland

#### **2016 Princeton CI-SS Lecture Notes:**

- **Combustion Dynamics** by Professor Sébastien M. Candel of École Centrale Paris, France
- **Chemical Kinetic Modeling for Combustion** by Prof. Henry J. Curran of Natl Univ. of Ireland, Galway, Ireland
- **Combustion Physics** by Prof. Chung K Law of Princeton University, United States
- **Advanced Laser Diagnostics in Combustion Research** by Professor Mark A. Linne of U. of Edinburgh, Scotland
- **Turbulent Combustion: Experiments and Fundamental Models** by Prof. J. F. Driscoll of Univ. of Michigan, United States

#### **2015 Princeton CI-SS Lecture Notes:**

- **Dynamics of Combustion Waves: From Flames to Detonations** by Prof. P. Clavin of Aix-Marseille Université, France
- **Combustion Chemistry** by Prof. Hai Wang of Stanford University, United States
- **Quantitative Laser Diagnostics for Combustion Chemistry** by Prof. R. K. Hanson of Stanford University, United States
- **Computational Turbulent Combustion** by Dr. T. Poinsot of the Inst de Mecanique des Fluides de Toulouse CNRS, France

#### **2014 Princeton CI-SS Lecture Notes:**

- **Combustion Theory and Applications in CFD** by Professor Heinz Pitsch of RWTH Aachen University, Germany
- **Combustion and Fuels Chemistry** by Professor William H. Green of MIT, United States
- **Reciprocating Engines** by Professor Rolf D. Reitz of the University of Wisconsin-Madison, United States
- **Unsteady Combustor Processes** by Prof. T. C. Lieuwen of the Georgia Institute of Technology, United States
- **New Developments in Combustion Technology** by Dr. G. A. Richards of NETL, DOE, United States

#### **2013 Princeton CI-SS Lecture Notes:**

- **Combustion Theory** by Prof. Moshe Matalon of the University of Illinois at Urbana-Champaign, United States

- **Combustion Chemistry** by Professor Michael J. Pilling of the University of Leeds, UK
- **Quantitative Laser Diagnostics for Combustion Chemistry** by Prof. R. K. Hanson of Stanford University, United States
- **Computational Turbulent Combustion** by Dr. T. Poinso of the Inst de Mécanique des Fluides de Toulouse CNRS, France

#### 2012 Princeton CI-SS Lecture Notes:

- **Combustion Theory** by Prof. Heinz Pitsch of the RWTH Aachen University, Germany
- **Combustion Chemistry** by Prof. Hai Wang of the University of Southern California, United States
- **Internal Combustion Engines** by Prof. T. C. Lieuwen of the Georgia Institute of Technology, and Prof. Rolf D. Reitz of the Univ. of Wisconsin, United States
- **Frontiers in Combustion -in a Global Environment Context** by Prof. R. H. Socolow of Princeton University, United States
- **New Developments in Combustion Technology** by Dr. G. Richards of National Energy Technology Lab, United States
- **Alternative Fuels Including Biofuels** by Prof. William H. Green of MIT, United States
- **Cyber-Combustion** by Dr. Jacqueline H. Chen of Sandia National Laboratories, United States
- **Nanoengineered Reactive Materials, their Combustion and Synthesis** by Prof. R. A. Yetter of Penn State Univ., United States

#### 2011 Princeton CI-SS Lecture Notes:

- **Combustion Theory** by Professor Moshe Matalon of the U. of Illinois at Urbana-Champaign, United States
- **Combustion Chemistry** by Professor M. J. Pilling of the University of Leeds, UK
- **Combustion Laser Diagnostics** by Prof. Marcus Aldén of Lund University, Sweden

#### 2010 Princeton CI-SS Lecture Notes:

- **Combustion Theory** by Professor Norbert Peters of RWTH-Aachen, Germany
- **Combustion Chemistry** by Dr. C. K. Westbrook of the Lawrence Livermore National Lab and Dr. S. J. Klippenstein of the Argonne National Lab, United States