

Deanna Lacoste is an associate professor of mechanical engineering at the Clean Combustion Research Center (CCRC) of the King Abdullah University of Science and Technology (KAUST). She obtained her MS, PhD and Habilitation from the University of Poitiers – ENSMA, in France. From 2003 to 2014, she has been a post-doctoral fellow and a CNRS research engineer at the EM2C Laboratory, Ecole Centrale Paris, in France. In 2014, she joined the CCRC as a research scientist and in 2016, she became an assistant professor of mechanical engineering. In 2021, she was promoted to associate professor. Professor Lacoste's research focus on plasma-assisted combustion, detonations, control of flame dynamics and development of dedicated optical diagnostics.

Deanna A. Lacoste

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Education

- 2011: **Habilitation to Supervise Research**, The University of Poitiers - ENSMA, France, “Experimental study of reacting flows and electrical discharges”.
- 1999-2002: **PhD in Combustion Science**, The University of Poitiers - ENSMA, France, “Experimental study of lean stratified premixed flames in a constant volume chamber”, supervised by Dr. Marc Bellenoue and Prof. Tadashi Kageyama.
- 1998-1999: **Master Degree in Aerodynamics, Combustion and Thermodynamics**, The University of Poitiers, France.
- 1995-1998: **Master Degree in Mechanical Engineering**, IFMA (French Institute for Advanced Mechanical Engineering), Clermont-Ferrand, France.

Career

- Since 2021: **Associate Professor** of Mechanical Engineering at the King Abdullah University of Science and Technology, Clean Combustion Research Center, Thuwal, Saudi Arabia.
- 2016-2021: **Assistant Professor** of Mechanical Engineering at the King Abdullah University of Science and Technology, Clean Combustion Research Center, Thuwal, Saudi Arabia.
- 2014-2016: **Research Scientist** at the King Abdullah University of Science and Technology, Clean Combustion Research Center, Thuwal, Saudi Arabia.
- Mar. 2014: **Invited Research Scientist** at The University of Tokyo, Department of Advanced Material Science (Prof. Kazuo Terashima Laboratory), Kashiwa Campus, Japan.
- Feb.-May. 2013: **Invited Research Scientist** at The University of Tokyo, Department of Advanced Material Science (Prof. Kazuo Terashima Laboratory), Kashiwa Campus, Japan.
- 2013-2014: **Senior Research Engineer** at CNRS, EM2C Laboratory CNRS - Ecole Centrale Paris, Châtenay - Malabry, France.
- Jan.-Mar. 2012: **Invited Research Scientist** at The University of Tokyo, Department of Advanced Material Science (Prof. Kazuo Terashima Laboratory), Kashiwa Campus, Japan.
- 2004-2012: **Junior Research Engineer** at CNRS, EM2C Laboratory CNRS - Ecole Centrale Paris, Châtenay - Malabry, France.
- 2003-2004: **Research fellow in Optical Diagnostics**, EM2C Laboratory CNRS - Ecole Centrale Paris, Châtenay - Malabry, France.

Supervision of research

Since 2004, I supervised and co-supervised 18 PhD students, 12 Post-doctoral fellows, and 12 Master degree students.

Service to scientific community

- **Associate editor** of the Elsevier journal *Proceedings of the Combustion Institute*.
- **Editorial board member** of the Elsevier journal *Applications in Energy and Combustion Science*.
- **Technical committee member** of the weekly *Combustion Webinar* organized by Georgia Tech.
- **Chair** of the KAUST workshop *Women in Science, Engineering and Research (WISER)*, hold at KAUST, Mar. 8-9 2022
- **Program co-chair** for the *13th Asia-Pacific Conference on Combustion, ASPACC-2021*, Abu Dhabi, Dec. 4-9, 2021
- **Co-chair** with Prof. S.P. Nunes and Prof. N.M. Khachab of the KAUST workshop *Women in Science and Engineering (WISE)*, hold at KAUST, Mar. 8-9, 2021
- **Co-organizer** with Prof. G. Magnotti of the “*Clean Combustion Winter School*”, hold at KAUST, Jan. 28 – Feb. 16, 2018.
- **Co-chair** with Prof. M.S. Cha of the “*KAUST Research Conference: New Combustion Concepts*”, hold at KAUST, Mar. 6-9, 2017.

Recent funding

Conference, workshop and school: KAUST CI-SS Carbon Free Combustion (2022, 50 kUSD from the Combustion Institute), KAUST workshop WISER (2022, 86 kUSD, from KAUST OSR)

CRG project: Principal Investigator (PI) of the project “Tailoring flame dynamics in carbon free combustors” (2020-2023, 800 kUSD)

Industrial projects: PI of two projects “Explosion proof wireless sensors” (2018-2020, 400 kUSD), and “Characterization of flame quenching processes in combustion arresters” (2019-2021, 460 kUSD), funded by The Boeing Company.

Journal articles

I have co-authored more than 70 journal papers and, according to Web of Science, my H index is 20. Here is the list of my 5 most recent papers:

1. S. Starikovskaia, **D.A. Lacoste**, G. Colonna, Non-equilibrium plasma for ignition and combustion enhancement, *Eur. Phys. J. D* 75:231, 2021
2. K.P. Chatelain, Y. He, R. Mével, **D.A. Lacoste**, Effect of the reactor model on steady detonation modelling, *Shock Waves* 31, 323-335, 2021
3. M.L. Castela, A. Garciduenas Correa, J.S. Damazo, **D.A. Lacoste**, Thermoacoustic coupling of premixed flames in mesoscale diameter tubes, *Combust. Flame* 234, 111676, 2021
4. A.M. Mahuthannan, Y. Krishna, G. Magnotti, W.L. Roberts, **D.A. Lacoste**, Time-resolved Thermometric investigation of flame quenching between parallel flat plates, *Fuel* 305, 121511, 2021
5. P. Ding, M. Ruchkina, D. Del Cont-Bernard, A. Ehn, **D.A. Lacoste**, J. Bood, Temporal dynamics of femtosecond-TALIF of atomic hydrogen and oxygen in a NRP discharge-assisted methane-air flame, *J. Phys. D: Appl. Phys.* 54, 275201, 2021.

Patents

I have protected my inventions in 10 patents. Here is the list of my 5 most recent patent applications:

1. **D.A. Lacoste**, T.F. Guiberti, A. Katoch, Adjustable dual fuel injector for control of flame dynamics in carbon free combustion systems, U.S. Application No. 63/118,065, November, 2020
2. **D.A. Lacoste**, W.L. Roberts, Flow generator for gas sampling in quiescent volumes, U.S. Application No. 63/115,324, Nov. 2020
3. T.F. Guiberti, E. Kwon, J.S. Damazo, **D.A. Lacoste**, W.L. Roberts, Flame Arrestor, European Patent No. EP 3 679 989 A1, Jul. 2020
4. **D.A. Lacoste**, Auto driven plasma actuator for transition from deflagration to detonation combustion regime, U.S. Patent Serial No. 16/497,979, 2019
5. J.S. Damazo, **D.A. Lacoste**, E. Kwon, W.L. Roberts, Combustion arrester quantification systems and methods, U.S. Patent No. US 10,286,241 B2, May 2019

Conferences and workshops

I have presented my scientific results in more than 100 international conferences. Here, is the list of my 5 most recent invited lectures in international conferences and symposiums:

1. **D.A. Lacoste**, Non-equilibrium plasma discharges for combustion applications: experiments and diagnostics, 75th Gaseous Electronics Conference, Sendai, Japan, Oct. 3-7, 2022
2. **D.A. Lacoste**, Plasma-assisted combustion, 39th International Symposium on Combustion, Vancouver, Canada, Jul. 24-29, 2022
3. **D.A. Lacoste**, Tailoring the power of burning plasmas, Energetic Materials Gordon Research Conference, Manchester, NH, USA, Jun. 26 – Jul. 1, 2022
4. **D.A. Lacoste**, Plasma-assisted combustion above atmospheric pressure: Challenges and opportunities, *ICOPS 2020*, Virtual Conference, Dec. 6 – 10, 2020
5. **D.A. Lacoste**, S. Rojas Chavez, K.P. Chatelain, T.F. Guiberti, Laser Diagnostics for Detonation Studies, Keynote lecture at 18th Brazilian Congress of Thermal Sciences and Engineering, Virtual Conference, Nov. 16 – 20, 2020