



The Combustion Institute

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Kelly Senecal

2022 Candidate Profile: The Combustion Institute Board of Directors

Reasons for Nomination

I have over 20 years of experience in reacting flow CFD through my company, Convergent Science. In this role I have worked with countless companies, universities, and national laboratories. I understand what industry needs from the combustion community, and I can bring this knowledge to the Combustion Institute (CI). For example, I recently co-founded the Computational Chemistry Consortium (C3). C3 brought together OEMs and university/research laboratories to create a single, consistent kinetic mechanism that covers a wide range of conventional and alternative fuels. The resulting mechanism is now being used to design cleaner combustion systems.



I would also bring my passion for combustion. I have been a champion of improving combustion devices (in particular IC Engines) throughout my career, but especially since my 2016 post-Dieselgate TEDx talk “In Defense of Internal Combustion.” I have spent significant time unraveling the misconceptions around combustion and alternative technologies. My recent book *Racing Toward Zero* emphasizes the importance of having a mixture of technologies, including sustainable combustion options, in the future transportation landscape. Promoting this solution is critical as we seek to recruit new students in the combustion sciences. I would welcome the opportunity to bring my unique brand of messaging to the CI.

See the next page for the candidate’s curriculum vitae.

Biographical Sketch of Kelly Senecal, Ph.D.

Professional Appointments (Current)

Co-founder and Owner	Convergent Science
Visiting Professor	University of Oxford
Co-founder and Director	Computational Chemistry Consortium
Adjunct Professor	University of Wisconsin-Madison

Education

Ph.D. in Mechanical Engineering	University of Wisconsin-Madison
M.S. in Mechanical Engineering	University of Wisconsin-Madison
B.A. in Physics	Lawrence University

Professional Interests and Specialties

- Co-lead developer of CONVERGE, an industry-leading commercial computational fluid dynamics (CFD) code for reacting flow simulations.
- Co-founder of the Computational Chemistry Consortium (C3). The goal of C3 is to develop improved kinetic fuel mechanisms for use with CFD. Both conventional and alternative fuels are considered.
- Vigorous opponent of the demonization of the IC engine and combustion in general.
- Passionate about life-cycle analysis (LCA) for powertrain technology assessment.

Select Professional Service

- Executive Committee Member, ASME ICE Division, 2019-Present.
- Member of the Advisory Committee for the Combustion Webinar, organized by Princeton University, 2020-Present.
- Member of the Scientific Advisory Committee for the THIESEL conference in Valencia, Spain.
- Member of the Board of Advisors, Central States Section of the Combustion Institute, 2014-Present.
- Various mentorship roles for students and early career professionals.
- Industry Advisory Board member for the Master of Engineering with an emphasis in Engine Systems (MEES) degree program, University of Wisconsin-Madison, 2021-Present.
- Founder and organizer of the ASME webinar series “The Future of the Internal Combustion Engine,” 2021-Present.
- Reviewer for various journal articles, conference papers, book chapters, and funding proposals.
- Various editorial roles for journals and books.

Select Honors and Awards

- Fellow of the Society of Automotive Engineers (SAE).
- Fellow of the American Society of Mechanical Engineers (ASME).
- Recipient of the ASME Internal Combustion Engine Award, 2019.
- Recipient of multiple HPCwire Awards for Best Use of HPC in Industry, Best Use of HPC in Automotive, and Best Use of HPC for Data Analytics and Artificial Intelligence, 2019, 2020, 2021.
- Signature Lecture Speaker at the University of Georgia, 2022.
- TEDx speaker, “In Defense of Internal Combustion,” 2016.

Professional Societies

- The Combustion Institute
- Society of Automotive Engineers (SAE)
- American Society of Mechanical Engineers (ASME)
- American Association for the Advancement of Science (AAAS)

Books Authored and Edited

- Senecal, Kelly and Leach, Felix, *Racing Toward Zero: The Untold Story of Driving Green*, SAE International, 2021.
- Kalghatgi, Gautam, Avinash Kumar Agarwal, Felix Leach, and Kelly Senecal, editors. *Engines and Fuels for Future Transport*, Springer, Singapore, 2022.

Additional Information

- Given over 50 keynote and invited talks globally.
- Authored and co-authored more than 100 peer-reviewed publications with over 5,000 citations.
- Frequently invited panel speaker and moderator.