

Curriculum Vitae Thierry POINSOT

Directeur de Recherche

CNRS IMFT Toulouse

poinsot@imft.fr



PROFESSIONAL PREPARATION

- Ingénieur de l'Ecole Centrale Paris and master degree in heat transfer, June 1980.
- PhD Thesis, Ecole Centrale Paris, June 1983. *Experimental and theoretical study of heat and mass transfer in mixtures of vapor and non-condensable gas*. Funding: Michelin co.
- Thèse d'Etat: Université Paris XI 1987. *Experimental and theoretical analysis of combustion instability in premixed turbulent combustors*. Funding: DRET (French army), SNECMA co.

APPOINTMENTS

1980 - 1983: PhD student at Laboratoire EM2C – Ecole Centrale de Paris (CNRS grant)

1983 - 1988: Research scientist at Laboratoire EM2C – Ecole Centrale de Paris (CNRS)

1988 - 1990: Post doctoral fellow, Center for Turbulence Research, Stanford.

1990 - 1992: Research scientist, Laboratoire EM2C (CNRS), Ecole Centrale de Paris.

Since 1992:

- Research director, Institut de Mécanique des Fluides de Toulouse (CNRS and INP Toulouse).
- Scientific advisor for CERFACS, Toulouse (www.cerfacs.fr)
- Member of the French Academy of Sciences since 2020
- Senior research scientist at CTR (Center for Turbulence Research, Stanford University and NASA Ames)
- Consultant for various companies worldwide
- Professor (Computational Fluid Dynamics, Combustion) in French engineering schools and at foreign universities (Stanford, Princeton, Tsinghua, Kanpur). Invited professor in professional education and research centers.

FIVE RECENT PUBLICATIONS (Hfactor on Web of science: 53, total citations (excluding self citations): 10200). Full list (>220 papers) at www.cerfacs.fr/~poinsot.

1- Most cited paper: Poinsot T. and Lele S. (1992). Boundary conditions for direct simulations of compressible reacting flows. *J. of Comp. Physics*. **101**, 1, 104-129 (Cited 1270 times (wos), 2850 (google)).

2 - Most cited book: Poinsot T. and Veynante D. "Theoretical and numerical combustion". R.T Edwards. (Cited 2000 times). Used worldwide for combustion courses at graduate level. 3500 copies sold.

3 - Roux, S. Lartigue, G., Poinsot, T., Meier U. and Berat C. Studies of mean and unsteady flow in a swirled combustor using experiments, acoustic analysis, and large eddy simulations. *Combust. Flame*, **141**, 40-54 (2004) (Cited 163 times, most cited *Comb. Flame* paper over 2004/09 period)

4 - Colin, O., Ducros, F., Veynante, D. and Poinsot T. (2000) A thickened flame model for large eddy simulations of turbulent premixed combustion. *Phys. Fluids* **12**, 7, 1843-1863 (Cited 315 times)

5 - McManus K., Poinsot, T. and Candel S. A review of active control. *Prog. En. Comb. Sci.* **19**, 1-29 (1993) (Cited 303 times)

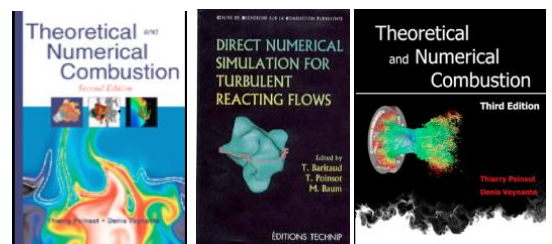
RESEARCH INTEREST AND EXPERTISE

- Leader of the European Research Council advanced grant INTECOCIS (intecocis.inp-toulouse.fr) on combustion instability simulations on massively parallel systems 2013-2018.
- Leader of the European Research Council advanced grant SCIROCCO (cerfacs.fr/scirocco) on hydrogen combustion to store renewable energy 2019-2024.
- Supervision of 65 PhD thesis, 20 post doctoral works and 100 Master thesis since 1983.
- Organized and managed more than 200 contracts for industry (PSA, Renault, Mercedes, Alstom, Ansaldo, Snecma, Turbomeca, Air Liquide, Airbus, Total, Snecma DMS, Siemens, Ferrari, PSA, Renault...) and for French organizations (DGA, ANR, DPAC) and European programs (FP 5, 6 and 7, Marie Curie programs, STREPS, IP) agencies. Estimated total funding: 30 Meuros.
- Coordinator of European projects : PARALLEL AERO (parallel computing for aircraft), ACIACOC (active control of instabilities). Work Package leader in twenty EC projects. Organizer of four Marie Curie network programs coordinated by my team at CERFACS (FLUISTCOM, ECCOMET, MYPLANET, COPA GT) corresponding to 10 Meuros and more than 30 PhD grants over Europe.
- Founder and scientific coordinator of CRCT (Centre de Recherche sur la Combustion Turbulente): CRCT is a joint organization including Ecole Centrale Paris, IMFT (CNRS), CERFACS and IFP-EN, promoting fundamental studies in turbulent combustion and scientific exchanges between combustion experts in France. Organizer of the annual CRCT meetings (with more than 100 persons attending) since 1992.
- Organizer of the international FLUISTCOM (150 persons in 2007) and MUSAF (Multiphysics Unsteady Simulation for Aeronautical Flows: 250 persons attending in 2010) international workshops.
- Coordinator of the combustion group at the Summer Programs of the Center for Turbulence Research (Stanford University: ctr.stanford.edu) since 1990 (organizer : Pr P. Moin).
- Principal investigator in the US Dept of Energy INCITE project “Large Eddy Simulation of two phase flow combustion in gas turbines” since 2008.
- Principal investigator in the European Research Council advanced grant INTECOCIS (intecocis.inp-toulouse.fr). 2.5 Meuros 2013-2018.

SYNERGISTIC ACTIVITIES

- Courses taught on Computational Fluid Dynamics, numerical combustion, theoretical combustion at Ecole Centrale Paris, Institut Supérieur de l’Aéronautique et de l’Espace, ENSEEIHT, INSA Toulouse, Université P. Sabatier, Stanford, Von Karmann Institute, CISM, Collège de Polytechnique, etc

- Author of “Theoretical and numerical combustion”, textbook on combustion (more than 3000 copies sold). Third edition available in Nov 2011 on elearning.cerfacs.fr.



- Author of the ‘Combustion’ chapters in « Instabilities of flows: with and without heat transfer and chemical reaction ». Editors: T. Sengupta and T. Poinso. CISM Courses and Lectures 517, 2010.
- Editor of ‘Direct simulation for turbulent reacting flows’ and coauthor of most papers. T. Baritaud, T. Poinso, M. Baum. Technip 1997. ISBN 2 7108 0698 3. Author of the ‘Combustion’ chapter in Encyclopedia of Computational Mechanics, Hughes, de Borst and Stein editors.
- Creator of the CERFACS Elearning web site (CFD, combustion and HPC): www.cerfacs.fr/elearning

PATENTS (on the control of combustion instabilities. These French patents have been extended to USA, Canada and Japan. The reference numbers given below correspond to the French version)

- Indirect active control of combustion instabilities. CNRS and SNECMA (1989).
- Jet injection with adjustable direction and spreading rate. CNRS and Air Liquide. Brevet FR2007/051597.
- Control of jets in furnaces. CNRS and Air Liquide. Brevet FR2007/051598.
- Control of liquid fuel jets by secondary air jets. CNRS and Air Liquide. Brevet FR2009/050033.

AWARDS (see www.cerfacs.fr/4-25752-Prizes.php for a complete list)

- Médaille de bronze CNRS in 1988 and best DRET Scientist 1991 (French Army Research Organization)
- First Cray Prize (Scientific Computing) in 1993
- Prix Edmond Brun of Academie des Sciences in 1996 (Fluid Mechanics)
- First BMW prize as adviser for PhD of B. Caruelle in 2002.
- Grand Prix de l'Académie des Sciences, Paris, 2003.
- AIAA Associate Fellow in 2003.
- 'Prime d'excellence scientifique' of CNRS in 2009-2013.
- ERC advanced grant in 2013 on thermoacoustics (<http://intecocis.inp-toulouse.fr>: 2.5 Meuros).
- ERC advanced grant in 2019 on hydrogen combustion for renewable energy storage (cerfacs.fr/scirocco)
- Hottel plenary lecture in 36th Symp. (Int.) Comb. 2016 (Seoul).

PROFESSIONAL ASSOCIATIONS MEMBERSHIPS

- Editor in chief of *Combustion and Flame*, first journal in combustion (more than 700 papers per year)
- Program chair of the 35st Symp. (Int.) on Comb., San Francisco 2014 (with Pr S. Chung, KAUST)
- Member of the Scientific Steering Committee of *PRACE* (www.prace-project.eu). Member of the EESI (European ExaScale Initiative) in the Industrial and Engineering applications (www.eesi-project.eu).
- Expert for the French ministry of research (DSPT 8), National Science Foundation, ANR (Agence Nationale pour la Recherche), European Commission, ERC programs.
- Reviewer for *Combustion and Flame*, *Journal of Computational Physics*, *Combustion Science and Technology*, *Combustion Theory and Modelling*, *Journal of Fluid Mechanics*, *Journal of Sound and Vibration*, *Journal of Propulsion and Power*, *AIAA Journal*, *J. Prop. Power*, *Journal de Physique*, *Flow Turbulence and Combustion*, *CR Académie des Sciences*...