User:Vervisch

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Personal Information

Luc Vervisch
Professor at INSA de Rouen Normandie
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Research Activities

Luc research uses numerical simulations and data driven approaches to address reacting flows physics. The first and foremost studied problems relate to combustion and flames. Understanding the very details of the physics to answer scientific questions with computer simulation are the main objectives. Luc has developed physical modelling (set of equations) used in software specialized in virtual prototyping of environmentally friendly systems for energy production, transportation and transformation industries.

Current projects include gas purification and fluid-mechanics in line with the next generation of carbon-neutral fuels.

- Get the ORCh code (compiled version here: here) to automatically reduce and optimise detail chemistry, and generate database for ANN training with turbulent micro-mixing.
- Download the HYPE method for solving the population balance equation for non-inertial particles featuring strongly non-linear surface growth/loss: HYPE code
- Download the code for chemistry reduction and integration by ANN: ML training and using routines
- Download the code for data-driven combustion regime identification from Raman/Rayleigh line measurements: ML training and using routines

Teaching Activities

2019-2020

Undergraduate:

- Gas dynamics
- Airfoil solutions
- Two-phase flows
- Turbulence modeling

Graduate:

- Turbulent combustion modeling
- Direct and Large Eddy Simulation
- Lattice Boltzmann method
- Machine learning for flow simulation

Educational Background

1989	M.Sc.	Aerothermochemistry	University of Rouen Normandie
1989	Gold-Medal	Music	Conservatory of Haute-Normandie (Class: Prof. L. Thiry)
1991	PhD	Mechanical Engineering	National Hydraulic Laboratory Chatou & University of Rouen Normandy (Advisors: Prof. R. Borghi & Prof. D. Vandromme)
1992	Post-Doc	Mechanical Engineering	Center for Turbulence Research, Stanford University, California
1996	Habilitation	Mechanical Engineering	University of Rouen Normandie

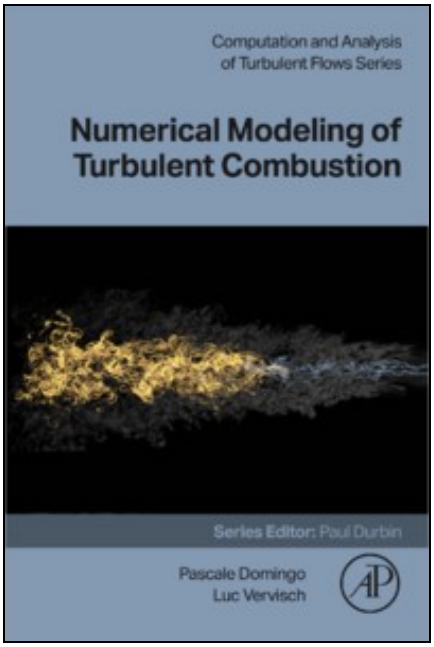
Awards and fellowships

- 1994/98/2006/08/10/12/14/16: Visiting Scholar at Center for Turbulence Research, Summer Program, Stanford University
- 1993 - Present: PI of more than 50 research grants (Industry and Funding Agency)
- 2003 - 2008: Junior Professor at Institut Universitaire de France
- 2010: Distinguished Professor (Classe Exceptionnelle)
- 2014 - 2019: Senior Professor at Institut Universitaire de France

- 2015: Prix Jaffé of the French Academy of Sciences
- 2016: Chevalier dans l'Ordre des Palmes Académiques
- 2018: Fellow of The Combustion Institute
- 2018/19/20: Mercator Fellow (DFG) at Simulation of Reactive Thermo-Fluid Systems, TU Darmstadt, Germany
- 2025/26/27: Mercator Fellow (DFG) at Simulation of Reactive Thermo-Fluid Systems, TU Darmstadt, Germany

Editorial activities

Order here!



- 2003 ? 2008: Editorial board of ?Combustion and Flame?, Elsevier.
- 2003 ? 2015: Co-editor of ?Flow Turbulence and Combustion?, Springer.
- 2003 ? 2013: Associate Editors board of ?Journal of Turbulence?, Taylor & Francis.
- 2010 - present: Co-editor of "Comptes-Rendus Mecanique", Elsevier.
- 2016 - present: Editorial Advisory board of ?Flow Turbulence and Combustion?, Springer.
- 2016: Co-editor of the ERCOFTAC Best Practice Guidelines "Computational Fluid Dynamics of Turbulent Combustion".

Recent academic duties

- 2001-present: Expert for research funding agencies (ANR France; DEISA-DECI, PRACE, ERC CEE; NSF, DOE, ACS-PRF USA; FOM Belgium, NWO, STW Netherlands, Swedish Research Council, GACR Czech; SNSF Swiss; ANVUR Italy; NSC Poland, EPSRC UK).
- 05/2012-09/2014: Director of the INSA office for research.
- 2008-2016: President of GENCI supercomputing reactive and multi-phase flow technical committee (CT2B).
- 2016-2020/2020-2022: Member of the Scientific Council of IFP Energies Nouvelles.
- 2022-present: President of the Scientific Council of IFP Energies Nouvelles.

Publications

Scopus ORCID Google scholar WoS

- F. Cenvinzo, A. Procacci, A. Parente, P. Domingo, L. Vervisch (2026), Accelerating mixing controlled turbulent combustion simulations with hybrid Navier?Stokes/ANN scalar-solvers, Application Energy Combust. Sci. 25: 100453.
- A. Dominguez-Gonzalez, D. Martinez-Ruiz, L. Vervisch (2026) Flame Curvature in Heat-Loss-Affected Lean Hydrogen Flames: A One-Dimensional Manifold Approach, Combust. Flame. 283:114571.
- G. Grassi, L. Vervisch, P. Domingo (2025) Reduced chemistry for numerical combustion of NH3/H2 fuel blend, Combust. Flame. 279: 114287.
- A. Beroudiaux, L. Vervisch, P. Domingo (2025) Artificial neural network chemistry solving for high-pressure hydrogen-air combustion, Int. J. Hydrogen Energy. 109: 669-683.
- H. Olguin, P. Domingo, L. Vervisch, C. Hasse, A. Scholtissek (2025) Advantages of the adoption of a generalized flame displacement velocity as a central element of flamelet theory, Flow Turbulence Combust, 114: 469?486.
- H. Olguin, P. Domingo, L. Vervisch, C. Hasse, A. Scholtissek (2024) On the closure of curvature in 2D flamelet theory, Combust. Flame. 267: 113599.
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- Z. Nikolaou, L. Vervisch, P. Domingo (2023) An optimisation framework for the development of explicit discrete forward and inverse filters, Comput. Fluids. 255: 105840.
- H.-T. Nguyen, C. Barnaud, P. Domingo, P.-D. Nguyen, L. Vervisch (2023) Large-Eddy Simulation of flameless combustion with neural-network driven chemistry, Application Energy Combust. Sci. 14:100126.
- P. Domingo, L. Vervisch (2023) Recent developments in DNS of Turbulent Combustion, Proc. Combust. Inst. 39: 2055?2076.
- L. Vervisch, G. Lodato, P. Domingo (2023) High-order polynomial approximations for solving non-inertial particle size density in flames, Proc. Combust. Inst. 39: 5385?5393.
- J. Bissantz, J. Karpowski, M. Steinhausen, Y. Luo, F. Ferraro, A. Scholtissek, C. Hasse, L. Vervisch (2023) Application of dense neural networks for manifold-based modeling of flame-wall interactions, Application Energy Combust. Sci. 13: 100113.
- Z. Nikolaou, L. Vervisch, P. Domingo (2022) Criteria to switch from tabulation to neural networks in computational combustion, Combust. Flame 246: 112425.
- Y. Huang, C. Jiang, K. Wan, Z. Gao, L. Vervisch, P. Domingo, Y. He, Z. Wang, C. Lee (2022) Prediction of ignition delay times of jet A-1/hydrogen fuel mixture using machine learning, Aerospace Science and Technology. 127: 107675.

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- G. Lodato, L. Vervisch, J.-B. Chapelier (2022) Mitigation of post-shock oscillations induced by artificial viscosity in discontinuous finite element methods, Comput. Fluids 241: 105491.
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- N. Tonicello, G. Lodato, L. Vervisch (2022) Turbulence kinetic energy transfers in DNS of shock wave-turbulence interaction in a compression/expansion-ramp, J. Fluid Mech. 935:A31-1-43.
- N. Tonicello, G. Lodato, L. Vervisch (2022) Analysis of high-order explicit LES dynamic modeling applied to airfoil flows, Flow Turbulence Combust. 108(1): 77-104.
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- S. Popp, S. Hart, D. Butz, D. Geyer, A. Dreizler, L. Vervisch, C. Hasse (2021) Assessing multi-regime combustion in a novel burner configuration with large eddy simulations using tabulated chemistry, Proc. Combust. Inst. 38(2): 2551-2558.
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- Y. Liu, Z. Wang, J. Xia, L. Vervisch, K. Wan, Y. He, R. Whiddon, H. Bahai, K. Cen (2019) Measurement and kinetics of elemental and atomic potassium release from a burning biomass pellet, Proc. Combust. Inst. 37(3): 2681-2688.
- K. Bioche, G. Ribert, L. Vervisch (2019) Simulating upstream flame propagation in a narrow channel after wall preheating: Flame analysis and chemistry reduction strategy, Combust. Flame. 200: 219-231.
- K. Bioche, L. Vervisch, G. Ribert (2018) Premixed flame-wall interaction in a narrow channel: Impact of wall thermal conductivity and heat losses, J. Fluid Mech. 856: 5-35.
- Z. Nikolaou, L. Vervisch (2018) A priori assessment of an iterative deconvolution method for LES sub-grid scale variance modelling, Flow Turbulence and Combust. 101(1): 33-53.
- Z. Nikolaou, R. S. Cant, L. Vervisch (2018) Scalar flux modelling in turbulent flames using iterative deconvolution, Phys. Rev. Fluids. 3(4): 043201.
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- C. Locci, L. Vervisch, B. Farcy, P. Domingo, N. Perret (2018) Selective Non-Catalytic Reduction (SNCR) of nitrogen oxide emissions: A perspective from numerical modeling, Flow Turbulence and Combust. 100(2): 301-340.
- G. Lodato, L. Vervisch, P. Clavin (2017) Numerical study of smoothly perturbed shocks in the Newtonian limit, Flow Turbulence and Combust. 99(3-4): 887-908.
- F. Proch, P. Domingo, L. Vervisch, A. Kempf (2017) Flame resolved simulation of a turbulent premixed bluff-body burner experiment. Part I: Analysis of the reaction zone dynamics with tabulated chemistry, Combust. Flame, 180:321-339.
- F. Proch, P. Domingo, L. Vervisch, A. Kempf (2017) Flame resolved simulation of a turbulent premixed bluff-body burner experiment. Part II: A-priori and a-posteriori investigation of sub-grid scale wrinkling closures in the context of artificially thickened flame modeling, Combust. Flame, 180:340-350.
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- N. Jaouen, L. Vervisch, P. Domingo, G. Ribert (2017) Automatic reduction and optimisation of chemistry for turbulent combustion modeling: Impact of the canonical problem, Combust. Flame, 175: 60-79.
- Z. Pouransari, L. Vervisch, L. Fuchs, A. Johansson (2016) DNS analysis of wall heat transfer and combustion regimes in a turbulent non-premixed wall-jet flame, Flow Turbulence and Combust., 97(3): 951-969.
- C. Locci, L. Vervisch (2016) Eulerian scalar projection in Lagrangian point source context: An approximate inverse filtering approach, Flow Turbulence and Combust., 97(1):363-368.
- A. Rasam, Z. Pouransari, L. Vervisch, A. Johansson (2016) Assessment of subgrid-scale stress statistics in non-premixed turbulent wall-jet flames, J. of Turbulence, 17(5): 471-490.
- L. Cifuentes, C. Dopazo, J. Martin, P. Domingo, L. Vervisch (2016) Effects of the local flow topologies upon the structure of a premixed methane-air turbulent jet flame, Flow Turbulence and Combust, 96(2): 535-546.
- G. Lodato, L. Vervisch, P. Clavin (2016) Direct numerical simulation of shock wavy-wall interaction: Analysis of cellular shock structures and flow patterns, J. Fluid Mech, 789: 221-258.
- B. Farcy, L. Vervisch, P. Domingo, N. Perret (2016) Reduced-order modeling for the control of selective non-catalytic reduction (SNCR), AIChE Journal, 62(3): 928-938.
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- G. Lodier, P. Domingo, L. Vervisch (2015) Quantification of the pre-ignition front propagation in DNS of rapidly compressed mixture, Flow. Turbulence and Combustion, 94(1): 219-235.
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- L. Vervisch, P. Domingo (2006) Two recent developments in numerical simulation of premixed and partially premixed turbulent flame C. R. Mecanique 334 (8/9): 523-530.
- P. Domingo, L. Vervisch, S. Payet and R. Hauguel (2005) DNS of a Premixed Turbulent V-Flame and LES of a Ducted-Flame using a FSD-PDF subgrid scale closure with FPI tabulated chemistry Combust. Flame 143(4): 566-586.
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- R. Hauguel, L. Vervisch, P. Domingo (2005) DNS of premixed turbulent V-Flame: coupling spectral and finite difference methods C. R. Mecanique 333 (1): 95-102.
- L. Vervisch, P. Domingo, M. Rullaud, R. Hauguel (2004) Three facets of turbulent combustion modeling: DNS of Premixed V-flame, LES of lifted jet-flame, RANS of non premixed jet-flame J. of Turbulence, 5(4): 1-36.
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- O. Gicquel, L. Vervisch, G. Joncquet, B. Labegorre, N. Darabiha (2003) Combustion of residual steel gases: Laminar flame analysis and turbulent flamelet modeling, Fuel 82(8): 983 - 991.
- P. Domingo, L. Vervisch, K.N.C. Bray (2002) Partially premixed flamelets in LES of nonpremixed turbulent combustion Combust. Theory and Modelling 6(4): 529-551.
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- D. Veynante, L. Vervisch (2002) Turbulent Combustion Modeling Prog. Energ. Sci., 285(3): 193-266.
- V. Favier, L. Vervisch (2001) Edge flames and partially premixed combustion in diffusion flame quenching Combust. Flame. 125 (1/2): 788-803.
- S. Ghosal, L. Vervisch (2001) Stability diagram for lift-off and blowout of a round jet laminar diffusion flame Combust. Flame. 124(4): 646-655.
- S. Ghosal, L. Vervisch (2000) Theoretical and numerical study of a symmetrical triple flame using the parabolic flame path approximation J. Fluid Mech. 415: 227-260.
- J. Reveillon, L. Vervisch (2000) Accounting for spray vaporization in non-premixed turbulent combustion modeling: A Single Droplet Model (SDM) Combust. Flame 121(1/2): 75-90.
- L. Vervisch, D. Veynante (2000) Interlinks between approaches for modeling turbulent flames Proc. Combust. Inst. 28: 175-183.
- L. Vervisch (2000) Using numerics to help understand nonpremixed turbulent flames Proc. Combust. 28: 11-24.
- L. Vervisch, T. Poinsot (1998) Direct numerical simulation of non-premixed turbulent combustion Annu. Rev. Fluid Mech. 30: 655-92.
- J. Réveillon, L. Vervisch (1998) Subgrid-Scale Turbulent Micromixing: Dynamic Approach AIAA Journal 36 (3): 336-341.
- V. Favier, L. Vervisch (1998) Investigating the effects of Edge-flames in liftoff in non-premixed turbulent combustion Proc. Combust. Inst. 26: 1239-1245.
- L. Vervisch, J. Réveillon (1996) Dynamics of iso-concentration surfaces in weak shock turbulent mixing interaction AIAA Journal 34 (12): 2539-2544.
- L. Vervisch, J. Réveillon, L., Guichard (1996) Recent developments in turbulent combustion modeling Journal Européen des Eléments Finis 5 (2): 161-196.
- J. Réveillon, L. Vervisch (1996) Response of the dynamic model to heat release induced effects Phys. of Fluids 8(8): 2248-2250.
- P. Domingo, L. Vervisch (1996) Triple flames and partially premixed combustion in autoignition of nonpremixed turbulent mixtures Proc. Combust. Inst. 26: 233-240.
- G.R. Ruetsch, L. Vervisch, A. Linan (1995) Effects of heat release on triple flames Phys. Fluids 7(6): 1447-1454.
- S. Mahalingam, J. H. Chen, L. Vervisch (1995) Finite-rate chemistry and transient effects in direct numerical simulations of turbulent non-premixed flames Combust. Flame 102(3): 285-297.
- L. Vervisch, E. Bidaux, K.N.C. Bray, W. Kollmann (1995) Surface density function in premixed turbulent combustion modeling, similarities between probability density function and flame surface approaches Phys. Fluids 7(10): 2496-2503.
- L. Guichard, L. Vervisch, P. Domingo (1995) Two-dimensional weak-shock vortex interaction in a mixing zone AIAA Journal 33(10): 2539-2544.

Invited keynote lectures at international conferences

- Vervisch L. (2024) Machine Learning for Combustion: Aspirations, Achievements, and Challenges to Address, Machine Learning for Combustion, Combustion Institute (British Section), London, Dec. 5.

- Vervisch L., P. Domingo (2024) Turbulent combustion modeling: Recent developments versus machine learning, 2024 Meeting of the Spanish Section of the Combustion Institute, SEIC24, Madrid, Oct 17-18.

- L. Vervisch (2023) Simulating turbulent flames and pollutants emission, Clean Air Conference, Lisbon, Portugal, June 25-29.

- L. Vervisch, P. Domingo, G. Lodato (2022) Novel findings in turbulent flame brush thickness dynamics and in the application of machine learning to solve for soot, UKCTRF, Newcastle University, UK, Sept. 13-14.

- L. Vervisch (2021) Turbulent reactive flow simulation, from physical modeling to machine learning, 2nd High-Fidelity Industrial LES/DNS Symposium, Sept. 22-24, online event.

- L. Vervisch (2019) Turbulent Reactive Flow Simulation: From Physical Modelling to Machine Learning, Sixteenth International Conference on Flow Dynamics, Nov. 6-8, Sendai, Miyagi, Japan.

- L. Vervisch (2019) Machine learning for turbulent flame simulation and hybrid stochastic/fixed-sectional approaches for solving population balance equations, International Workshop on: Clean Combustion Principle and Application, Sept. 25-27, Darmstadt, Germany.

- L. Vervisch (2018) Recent developments in turbulent reacting flow modeling: Non-intertial particles, machine learning based deconvolution and highly turbulent flames. Invited plenary at International ERCOFTAC Symposium on Engineering Turbulence Modeling and

Measurements, ETMM12, Sept. 26-28, Montpellier, France.

- L. Vervisch, P. Domingo, G. Lodato (2018) Numerical simulation of flames and turbulent combustion modeling. Invited keynote lecture at XXIII Fluid Mechanics Conference (KKMP), Sept 9-12, Zawiercie, Poland.
- L. Vervisch (2015) Simulation of turbulent flames: From high-performance computing to low-order models for process control, 15th International Conference on Numerical Combustion, Avignon, France, 19-22 April.
- L. Vervisch (2012) Combustion, flames and burner design: Challenges and computing tools Invited keynote lecture at COMBURA'12, Combustion Research and Application, Maastricht, The Netherlands 3-4 Oct.
- L. Vervisch (2012) Challenges and progress in turbulent combustion modeling Invited keynote lecture at 7th International Symposium on Turbulence, Heat and Mass Transfer, THMT, Palermo, Sicily, Italy 24-27 Sept.
- L. Vervisch, V. Moureau, P. Domingo (2010) Turbulent combustion modeling: new approaches for highly refined simulations Invited keynote lecture at V European Conference on Computational Fluid Dynamics ECCOMAS CFD 2010 Lisbon, Portugal,14-17 June.
- L. Vervisch (2009) Scalar scaling in LES of turbulent combustion Invited keynote lecture at COCCFEA International Workshop on Combustion Simulation and Modelling, Imperial College London, 17-18 Sept., London, UK.
- L. Vervisch, V. Moureau, P. Domingo, G. Lodato, D. Veynante (2009) Scalar fields subgrid scale energy in Large-Eddy Simulation of turbulent flames: Mesh quality criterion Invited introductory lecture at LESTAC09, Large-Eddy Simulation in Turbulence, Aeroacoustic and Combustion, Aug. 26-28, Marseille, France.
- L. Vervisch, P. Domingo (2008) Large-Eddy Simulation of turbulent combustion, comparing scalar variances with measurements Invited keynote lecture at DNS and LES of Reactive Flows, Oct 22-24, Maastricht, Netherlands.
- L. Vervisch, P. Domingo, V. Subramanian, G. Bonomeau (2008) Chemistry in Large-Eddy Simulation of turbulent flame Invited keynote lecture at The Combustion Institute, 20th Journées d?Etudes of the Belgian Section, May 6-8, Gent, Belgium.
- L. Vervisch, P. Domingo (2008) Large-Eddy Simulation of turbulent flames Invited keynote lecture at LES in Science and Technology, COST P20 Conference, 21-22 April, Poznan, Poland.
- L. Vervisch, G. Lodato, P. Domingo (2007) Reliability of Large-Eddy Simulation of turbulent flames Invited keynote lecture at Quality and Reliabiity of Large-Eddy Simulation, 24-26 October, Leuven, Belgium.
- L. Vervisch, P. Domingo (2005) DNS and LES of turbulent premixed combustion: A FSD-PDF SGS closure Invited plenary at DLES6, Direct and Large Eddy Simulation, ERCOFTAC, Poitiers, Sept. 12-14, France.
- L. Vervisch, P. Domingo (2005) DNS and LES of Turbulent Combustion Invited keynote lecture at Computational Fluid Dynamics in Chemical Reaction Engineering IV, Barga, June 19-24, Italy.
- L. Vervisch (2005) Quality assessment of DNS of reacting flows Invited keynote lecture at the First Workshop on Quality Assessment of Unsteady Methods for Turbulent Combustion Prediction and Validation, Darmstadt - Seeheim, June 16-17, Germany.
- L. Vervisch (2004) Linking DNS, LES, RANS and experiments Invited paper at the 7th Workshop on Turbulent Nonpremixed Flame, Chicago, 22-24 July, USA.
- L. Vervisch (2004) LES of turbulent combustion systems in the light of combustion theory, experiments and DNS Invited keynote lecture at the International Workshop on Unsteady combustion, Transport Phenomena and Chemical Reaction in Technical Systems, Karlsruhe University, 8-9 July, Germany.
- L. Vervisch, P. Domingo, R. Hauguel (2003) Turbulent combustion in the light of direct and large eddy simulation Invited plenary at Turbulent Shear Flow Phenomena-III, Sendai, 25-27 June, Japan.
- L. Vervisch, P. Domingo (2002) Challenges in partially premixed turbulent combustion modeling Invited plenary at 2002 GAMM Conference (Gesellschaft für Angewandte Mathematik un Mechanik) in Augsburg, 25-28 March, Germany.
- L. Vervisch, P. Domingo (2001) Large Eddy Simulation of partially premixed turbulent combustion Invited plenary at Symposium on turbulent mixing and combustion. IUTAM. Kingston, June 3-6, Canada.
- L. Vervisch (2001) Challenges in turbulent combustion modeling Invited plenary at 2001 Joint International Combustion Symposium, Kauai, Sept. 10-12, USA.
- L. Vervisch (2000) Using numerics to help understand nonpremixed turbulent flames Invited Topical Review at Twenty-Eighth Symposium (International) on combustion, Eidinburg, UK.
- L. Vervisch (1999) DNS and LES of non-premixed turbulent combustion Invited paper at AICHE Annual Meeting, Oct. 31 - Nov. 5, Dallas, TX, USA.
- L. Vervisch (1999) Numerical models for non-premixed turbulent combustion Invited plenary at 17th International Colloquium on the Dynamics of Explosions and Reactive Systems, July 25-30, Heidelberg, Germany.
- L. Vervisch (1999) DNS to help understanding of non-premixed turbulent flames Invited plenary at Second AFOSR International Conference on DNS and LES, New Brunswick, N.J., June 7-9, USA.
- L. Vervisch (1995) DNS for analysis of ignition of non premixed mixtures Invited paper at The combustion institute, Sezione Italiana, Naples, July 28, Italy.

Ph.D. Graduates

- (*) with INSA co-advisor / (**) external honorary advisor

- Stéphane Mélen, « Modélisation de la combustion turbulente en régime supersonique », 1995.
- Julien Réveillon, « Simulation dynamique des grandes structures appliquée aux flammes turbulentes non-prémélangées. », 1996.
- Laurent Blin*, « Simulation des grandes échelles dans un inverseur de poussée », 1999.
- Valérie Favier, « Contribution de la combustion partiellement prémélangée à la stabilisation des flammes turbulentes », 2000.
- Joan Boulanger, « Extrémité des flammes de diffusion. Analyse asymptotique et simulation directe de la combustion partiellement prémélangée », 2002. (Thèse ayant remporté le Prix de la section Française du Combustion Institute, Prix Paul Lafitte.)
- Marina Saveliera**, « Mathematical modeling of triple flame ring behavior », Swiss Federal Institute of Technology Zurich, 2003.

- Cyrille Lesieur « Modélisation de la combustion turbulente non-prémélangée dans un brûleur à jets séparés, application à la stabilisation d?une oxy-flamme », 2003.
- Raphaël Hauguel* « Flamme en V turbulente, Simulation numérique directe et modélisation de la combustion turbulente prémélangée », 2003.
- Matthieu Rullaud, « Analyse et modélisation de la production de CO et Nox dans une chambre de combustion aéronautique », 2004.
- Benoît Fiorina**, « Méthode FPI (Flame Prolongation of IMDL) appliquées aux brûleurs turbulents avec pertes thermiques », École Centrale Paris, 2004.
- Ganessan Subramanian* « Modélisation de l?auto-inflammation : Analyse des effets de la dilution par les gaz brûlés et des interactions avec la turbulence dédiée aux moteurs Diesel à charge homogène », 2005.
- Sandra Payet* « Analyse de l?oxy-combustion en régime dilué par simulation des grandes échelles », 2007.
- Erwin Georges* « Modélisation et simulation de l'auto-allumage de mélanges hydrocarbure/hydrogène dans un écoulement supersonique coaxial confiné d'air chaud », thèse en co-tutelle avec l?ONERA, 2007.
- Jérémy Galpin*, « Modélisation LES de la combustion avec une prise en compte des effets de cinétique détaillée et en perspective d?application moteur », 2007.
- Alexandre Naudin*, « Simulation des grandes échelles de la combustion turbulente avec chimie détaillée tabulée », 2008.
- Guido Lodato*, « Conditions aux limites tridimensionnelles pour la simulation directe et aux grandes échelles des écoulements turbulents. Modélisation de sous-maille pour la turbulence en région de proche paroi », 2008.
- Vallinayagam Pillai Subramanian*, « Numerical simulation of forced ignition using LES coupled with a tabulated detailed chemistry approach », 2010.
- Guillaume Godel*, « Modélisation de sous-maille de la combustion turbulente Développement d?outils pour la prédiction de la pollution dans une chambre aéronautique », 2010.
- Guillaume Lecocq*, « Approches hybrides combinant chimie complexe, description statistique et densité de surface de flamme pour la simulation aux grandes échelles de l?auto-inflammation, l?allumage par bougie et la flamme de prémélange dans les moteurs à allumage commande », 2010.
- Eric Albin*, « Contribution à la modélisation numérique des flammes turbulentes : comparaisons DNS-EEM-Expériences », 2010.
- Cindy Merlin*, « Simulation numérique de la combustion turbulente : Méthode de frontières immergées pour les écoulements compressibles, application à la combustion en aval d?une cavité », 2011.
- Nicolas Enjalbert*, « Modélisation avancée de la combustion turbulente diphasique en régime de forte dilution par les gaz brûlés », 2011.
- Guillaume Lodier*, « Analyse de l'initiation et du développement de l'auto-inflammation après compression rapide d'un mélange turbulent réactif - Application au contexte CAI/HCCI », 2013.
- Suresh Kumar Nambully*, "Accounting for differential diffusion effects in LES of turbulent combustion using a filtered laminar flame PDF approach. Application to stratified burners", 2013.
- François Pecquery*, "Développement d?un modèle numérique de prédiction des émissions d?oxydes d?azote pour la simulation aux grandes échelles de chambres de combustion aéronautiques", 2013.
- Jonathan Vahé, "Une approche multifractale pour la modélisation du micro-mélange à grand nombre de Schmidt", 2014.
- Abdullah Abou-Taouk**, "Optimization of Chemical Kinetics and Numerical Simulations of Industrial Gas Turbine Burners", Chalmers University of Technology, 2014.
- Benjamin Farcy*, "Analyse des mécanismes de destruction non-catalytique des Oxydes d'Azote (DeN0x) et application à la simulation aux grandes échelles (LES) d'un incinérateur", 2015.
- Zeinab Pouransari**, "Numerical studies of turbulent flames in wall-jet flows", KTH Stockholm, 2015.
- Nicolas Jaouen*, "An automated approach to derive and optimise reduced chemical mechanisms for turbulent combustion", 2017.
- Dorian Midou*, "Optimisation d'une lance de charbon pulvérisé", 2017.
- Kevin Bioche*, "Analyse de la propagation d'une flamme méthane/air dans un canal étroit bi-dimensionnel avec prise en compte des couplages thermiques", 2018.
- Arne Scholtissek**, "Flamelet modeling in composition space for premixed and non-premixed combustion", TU Darmstadt, 2018.
- Alexandre Bouaniche*, "A hybrid stochastic-sectional method for the simulation of soot particle size distributions", 2019.
- Andrea Seltz*, "Application of deep learning to turbulent combustion modeling of real jet fuel for the numerical prediction of particulate emissions", 2020.
- Niccolò Tonicello* , "High-order spectral element methods for the simulation of compressible turbulent flows", 2021.
- Mohamed Chemak*, "Large Eddy Simulation of Liquid-Fuel Film/Sooting-Flame Interaction in Wall Bounded Turbulent Flows", 2022.
- Hassan Tofaili*, "Revisiting deflagration-to-detonation transition in the context of carbon-free energy", 2022.
- Camille Barnaud*, "Méthode avancée de prototypage virtuel pour le dimensionnement d?un ensemble lance-tuyère avec prise en compte des transferts thermiques", 2022.
- Huu-Tri Nguyen*, "Numerical Modeling and simulation of steel gases combustion", 2022.