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Date of Birth: 06.08.1975

Nationality: Portuguese



Education and Professional Experience

1995 bis 1998	Master of Science (MSc) in Physical Chemistry, Goa University, India
1998 bis 2000	Lecturer in Physical Chemistry, Goa University, India
2000 bis 2004	Research Assistant, Karlsruhe Institute of Technology
12 / 2003	PhD (Dr. rer.nat.) in Physical Chemistry, Karlsruhe Institute of Technology
2004 bis 2007	Postdoc, Max-Planck-Institute of Biophysical Chemistry and University of Göttingen
2007 bis 2009	Postdoc, Sandia National Laboratories, Livermore, USA
2009 bis 2013	Junior-Professor (W1) „Physico Chemical Fundamentals of Combustion“, RWTH Aachen
2012 bis 2013	JSPS Visiting Professor, University of Tokyo, Japan
since 04 /2013	Head of Department for Physical Chemistry, Physikalisch-Technische Bundesanstalt
since 2014	Professor, Technical University of Braunschweig
since 2019	Director and Professor (B2), Physikalisch-Technische Bundesanstalt

Honors/Awards/Recognitions:

01.03.2004-31.12.2006	Max-Planck fellowship for postdoctoral research at Max-Planck Institute, Göttingen, Germany
2010	Distinguished paper award for the 32 nd International Symposium on Combustion
2011-present	Expert reviewer of the AVH Foundation, DAAD, ANR- France, STW- Netherlands, FWO-Belgium, JSPS-Japan, US-DOE
2012	JSPS visiting professor at the University of Tokyo, Japan
06.2015	Conferred the Title of “Director & Professor” by the then Federal President of Germany, Dr. Joachim Gauck
2016-present	Chairman of the Technical Committee on “Measurements of Energy and Related Quantities” of the International Measurement Confederation (IMEKO)
2016-present	Member of the Editorial Board for the Journal “Measurement”
2019-present	Member of the Advisory Board of the DIN (German Institute of Standards) Committee for Materials Testing (FAM)
2014-present	Member of the Executive Board of the Fuels Joint Research Group (FJRG)

Membership in Professional Societies:

The American Chemical Society (ACS)

The Society of Automotive Engineers (SAE)

Gesellschaft Deutscher Chemiker (GDCh)

Deutsche Bunsen Gesellschaft für Physikalische Chemie (DBG)

The Portuguese Section of the Combustion Institute

The German Section of the Combustion Institute

Life Member of the Indian Section of the Combustion Institute

Reviewer Activities:

- ANR-The French National Research Agency
- STW- Technology Foundation, Netherlands
- JSPS-Japanese Society of Promotion for Science
- AvH-Alexander von Humboldt Foundation
- FWO- Science Foundation of Flanders, Belgium
- US-DOE- United States Department of Energy
- Journal of Physical chemistry
- Industrial & Engineering Chemistry Research
- Chemical Physics Letters
- Fuel
- Proceedings of the Combustion Institute
- International Journal of Chemical Kinetics
- Combustion and Flame
- Energy & Fuels
- Physical Chemistry Chemical Physics
- Zeitschrift für Physikalische Chemie
- Shock Waves
- International Journal of Hydrogen Energy
- Flow Turbulence and Combustion
- Thermochemica Acta

Research Areas and Interests

- Reaction Kinetics in the gas phase (Energy conversion and Atmospheric Chemistry)
- Metrology for fluid energy carriers
- Physico Chemical fundamentals of Combustion
- Fuel characterization and Material Properties
- Spectroscopy and Photochemical Kinetics
- Laser diagnostics in Combustion
- High temperature process measurements

Selected Publications

- [1] FERNANDES, R; LUTHER, K.; TROE, J.; USHAKOV, V.: Experimental and modeling study of the reaction $H + O_2 (+M) \rightarrow HO_2 (+M)$ between 300 and 900 K, 1.5 and 950 bar, and in the bath gases $M = He, Ar, N_2$. *Physical Chemistry Chemical Physics*, 10, 4313- 4321 (2008)
- [2] FERNANDES, R; ZADOR, J.; JUSINSKI, L.; MILLER, J.; TAATJES, C.: Formally direct pathways and low-temperature chain branching in hydrocarbon autoignition: The cyclohexyl +O₂ reaction at high pressure. *Physical Chemistry Chemical Physics*, 11, 1320-1329 (2009)
- [3] ZADOR, J.; TAATJES, C.; FERNANDES, R.: Kinetics of Elementary Reactions in Autoignition Chemistry. *Progress in Energy and Combustion Science*, 37, 371-421 (2011)
- [4] WELZ, O.; ZADOR, J.; SAVEE, J.; Ng. M.; MELONI G.; FERNANDES, R, SHEPS, L.; SIMMONS, B.; OSBORN, D.; TAATJES, C.: Low-Temperature Combustion Chemistry of Biofuels: Pathways in the Initial Low-Temperature (550 K-750 K) Oxidation Chemistry of Isopentanol. *Physical Chemistry Chemical Physics*, 14, 3112-3127 (2012)
- [5] CHAKRAVARTY, H.; FERNANDES, R.: Reaction Kinetics of Hydrogen Abstraction Reaction by Hydroperoxyl Radical from 2-Methyltetrahydrofuran and 2,5-Dimethyltetrahydrofuran. *Journal of Physical Chemistry A*, 117, 5028-5041 (2013)
- [6] VRANCKX, S.; BEECKMANN, J.; KOPP, W.; LEE, C.; CAI, L.; CHAKRAVARTY, H.; OLIVIER, H.; LEONARD, K.; PITTSCH, H.; FERNANDES, R.: An experimental and kinetic modeling study of n-butyl formate combustion. *Combustion and Flame*, 160, 2680-2692 (2013)
- [7] PARAB, P.; HEUFER, K.; FERNANDES, R: Reaction kinetics of hydrogen atom abstraction from isopentanol by the H atom and HO₂ radical. *Physical Chemistry Chemical Physics*, 20, 10895-10905 (2018)
- [8] VALLABHUNI, S.; LELE, A.; PATEL, V.; LUCASSEN, A.; MOSHAMMER, K.; ALABBAD, M; Farooq, A.; FERNANDES, R.: Autoignition studies of Liquefied Natural Gas (LNG) in a shock tube and a rapid compression machine, *Fuel*, 232, 423-4308 (2018)
- [9] LELE, A.; VALLABHUNI, S.; MOSHAMMER, K.; FERNANDES, R; KRISHNASAMY, A.; NARAYANASWAMY, K.: Experimental and chemical kinetic modeling investigation of methyl butanoate as a component of biodiesel surrogate, *Combustion and Flame*, 197, 49-64 (2018)
- [10] HE, X.; SHU, B.; NASCIMENTO, D.; MOSHAMMER, K.; COSTA, M.; FERNANDES, R.: Auto-ignition kinetics of ammonia and ammonia/hydrogen mixtures at intermediate temperatures and high pressures. *Combustion and Flame*. 206, 189-200 (2019)

Relevant Collaborative Projects

- [1] BMBF- INNO INDIGO (EU-INDIA Project): Towards higher efficiencies and lower emissions for Indian-origin biodiesel combustion: Developing a predictive CFD model with validated reduced kinetics for device-scale applications, Industrie partners e.g. Kirloskar, Tata (2017 - 2020)
- [2] EU Project (EMRP- ENG 03): Metrology for Liquefied Natural Gas, Diverse Industry partners e.g. E.On, ENAGAS (2010 - 2013)
- [3] EU Project (EMRP-ENG 60-LNGII): Metrological support for LNG custody transfer and transport fuel applications, Diverse Industry partner e.g. Shell Global Solutions International, Oil and Gas Measurement Ltd. (2014 - 2017)
- [4] EU Project (EMPIR 16ENG09-LNGIII): Metrological support for LNG and LBG as transport fuel, Diverse Industriepartner z.B Shell, Emerson, MAN Diesel, Gas Natural (2017 - 2020)
- [5] DFG-Exzellenzcluster EXC 2163: SE2A Sustainable and Energy Efficient Aviation (2019-2023)