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Decreto Rettore Università di Roma "La Sapienza" n. 2674/2021 del 15.10.2021

PAOLA RUSSO Curriculum Vitae

Rome, 29th October 2021

Part I – General Information

Full Name	PAOLA RUSSO
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Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
M.Sc. in Chemical Engineering	1995	University of Naples Federico II	110 cum laude/110. Master Thesis title "Coal reactivity in gasification processes: influence of pyrolysis conditions"
Erasmus Student	1993/1994	Loughborough University of Technology (UK)	Exams: Computer Aided Process Engineering, Reaction Engineering, Pollution Control
Professional qualification as an Engineer	1995	University of Naples Federico II	
Visiting Ph.D Student	1998	Delft University of Technology (NL)	▪Title" Influence of NOx on soot combustion with supported molten salt catalysts"
Ph.D. in Engineering of Thermomechanical Systems	1999	University of Naples Federico II	▪PhD Thesis title "Catalytic abatement of soot particulate at the exhaust of Diesel engine"
Post Doc in Energy, Environment and Materials	2001	University of Salerno	▪ Title "Development of catalytic filters for the Diesel soot abatement"

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
28/3/2017	27/3/2026		National Professorship Qualification as Full Professor in Chemical Plant and Industrial Processes (09/D3)

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30/12/2012	present	Sapienza University of Rome	Associate Professor in Industrial and Technological Chemistry (ING-IND/27)
30/12/2008	29/12/2012	University of Salerno	Associate Professor in Industrial and Technological Chemistry (ING-IND/27)
8/6/2006	-	University of Padova	Professorship Qualification as Associate Professor in Industrial and Technological Chemistry (ING-IND/27)
1/2/2001	29/12/2008	University of Salerno	Assistant Professor in Industrial and Technological Chemistry (ING-IND/27)
1/11/1998	1/5/1999	University of Salerno	Research Assistant •Research work on “Laboratory tests for the characterization of catalytic filters”
1/11/1995	30/11/1995	University of Naples Federico II	Research Assistant •Research work on “Bibliographic survey on the use of X-ray diffraction technique for the microstructural characterization of carbonaceous solids”

IIIB – University Service

Start	End	Institution	Position
2021	2021	University of Udine	Member of the Committee for the selection of 1 fixed-term Researcher at the Department of Engineering and Architecture (SC 09/D3 – SSD ING-IND/27)
2021	Present	Sapienza University of Rome	Member of the Management Committee for Quality assurance of the Master and Bachelor courses in Chemical Engineering
2020	2021	University of Padova	Member of the Committee for the selection of 1 fixed-term Researcher at the Department of Industrial Engineering (SC 09/D3 – SSD ING-IND/ 27)
2020	2020	Sapienza University of Rome	Member of the Committee for the selection of 1 Associate Professor at the Department of Chemical Engineering Materials Environment (SC 09/D3 – SSD ING-IND/ 27)
2019	Present	Sapienza University of Rome	Responsible of the project “Calorimetric Characterization of Biomolecules” for Paths for Transversal Skills and Orientation (PCTO)
2018	2018	Sapienza University of Rome	Member of the Committee for the admission to Chemical Processes for Industry and Environment PhD course

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2017	2017	University of Padova	Member of the Committee for the selection of 1 fixed-term Researcher at the Department of Industrial Engineering (SC 09/D3 – SSD ING-IND/ 27)
2015	Present	Sapienza University of Rome	Member of the Degree Program Board of the Master course in Safety Engineering
2015	Present	Sapienza University of Rome	Member of the Committee for the verification of personal preparation for admission to the Master course in Chemical Engineering
2015	2015	Sapienza University of Rome	Member of Committee for professional qualification examination in Safety Engineering (L9, LM26)
2014	Present	Sapienza University of Rome	Member of the Scientific Board of the PhD program in Chemical Processes for Industry and Environment
2014	2016	Sapienza University of Rome	Secretary of the Degree Program Board of the Master course in Chemical Engineering
2013	2015	Sapienza University of Rome	Member of the Management Committee for Quality assurance of the Master and Bachelor courses in Chemical Engineering
2011	2011	University of Nancy	Member of the examining committee for accreditation to supervise research of PhD Oliveir Dufaud at “Ecole Nationale Supérieure des Industries Chimiques de Nancy”.
2011	2012	University of Salerno	Member of the Faculty Committee for International Exchange Programs
2011	2012	University of Salerno	Chair of the Committee for International Exchange Programs of the Master and Bachelor courses in Chemical Engineering
2011	2012	University of Salerno	Faculty Delegate in the Scientific Technical Committee for Library Services
2011	2011	University of Salerno	Member of the Committee for the Final Examination for the PhD in Chemical Engineering
2006	2006	Politecnico di Milano	Member of the Committee for the selection of 1 fixed-term Researcher at the Department of Chemical Engineering “Giulio Natta” (SSD ING-IND/ 27).
2006	2009	University of Salerno	Member of the Committee for the placement test of the Medicine Faculty

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2002	2012	University of Salerno	Member of the Committee for the placement test of the Engineering Faculty
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IIC – Professional Experience

Start	End	Institution	Position
2021	2021	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the "Experimental tests carried out on a section of methane pipeline no longer in use, parameters and methods of fire prevention and assessment for the integration of the current Technical Regulation attached to the Ministerial Decree of 17 April 2008" for the transport of hydrogen through the network and existing or future natural gas infrastructures
2021	2021	Court of Civitavecchia	Court-appointed Expert (Judge F. Cerasoli) in reconstructing the causes of the fire in a commercial premises (Cerveteri, 15/10/2020) (case n. 304/2021 RG)
2020	2021	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the "Risk assessment and identification of safety measures for multi-fuel refuelling stations"
2020	2020	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the "Evaluation of the social risk assessment model presented by SNAM Rete Gas"
2019	2019	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the "Risk assessment on the storage of innovative storage systems (Li-ion, Li-polymer, Li batteries) and identification of fire and explosion prevention systems"
2019	2019	Court of Ancona	Court-appointed Expert (Judge S. Piermartini) for reconstruct the causes and dynamics of the explosion occurred at a thermal power plant (Jesi, 26/3/2019) (case n. 2209/2019 RGNR)
2018	Present	ADR Aeroporti di Roma	Party's technical consultant for the fire at Fiumicino airport on 7/5/2015 (case n. 3080/15 RGNR - at the Court of Civitavecchia)
2018	2019	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the "Elaboration of technical regulation of fire prevention for temporary deposits and waste storage, as defined by D.L. n.

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2018	2018	Court of Catania	205/2010 and subsequent amendments, and not subjected to fire prevention procedures as D.P.R.151/2011"
			Court-appointed Expert (Judge A. Ursino) for the investigation into the explosion that occurred in Catania on 20/3/2018 (case n. 3580/18 RGNR)
2016	2017	Ministry of the Interior - National Fire Corps, Rome	Member of the Working Group on the definition of "Study and Harmonization of the regulations on refuelling stations for alternative fuels vehicles"
2016	2017	Court of Teramo	Court-appointed Expert (Judge F. Conciatori) for the investigation of a school explosion (Piano D'Accio, 3/10/2013) (case n. 2449/14 RGNR)
2007	2007	Court of Foggia	Court-appointed Expert (Judge M.M. Valente) for the risk analysis of a contaminated site (Manfredonia, 26/9/1976) (case n. 20123/02 RG)
2006	2007	Court of Spoleto	Assistant to the Court-appointed Experts (Judge F.vAlbano) for the investigation of the explosion at a vegetal oil refining plant (Campello sul Clitunno, 25/11/2006) (case n. 1295/06 RGNR)

IIID– Seminar, Symposium and Conference organization

Year	Title	Function
2021	ICHS2021– 9th International Conference on Hydrogen Safety 2021, Edinburgh, 21-24 September 2021 (online)	Member of the Scientific Committee
2021	ORTOPACK HEALTH Packaging for foods with high nutritional value: advanced methodologies for new solutions, 16 June 2021 (online meeting)	Member of the Scientific Committee
2020	Digital Stakeholders' Workshop (HyTunnel-CS project), 4-5 May 2020 (online meeting)	Chair of the Organizing Committee
2019	ICHS2019 – 8 th International Conference on Hydrogen Safety 2019, Adelaide, South Australia, 24-26 September 2019	Member of the Scientific Committee and of the Best Paper Award Committee
2019	ISFEH9 - Ninth International Seminar on Fire and Explosion Hazards, St. Petersburg, Russia, 21-26 April 2019	Member of the Best Paper Award Committee

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2016	36 th International Symposium on Combustion, Seoul, Korea, 31 July- 5 August 2016	Co-Chair of the Colloquium "Detonations, explosions and supersonic combustion"
2016	ICCMSE 2016 - 12 th International Conference of Computational Methods in sciences and engineering, Athens, Greece, 17-20 March 2016	Co-Chair of the Symposium on Computational Combustion
2014	X ISHPMIE - 10 th International Symposium on Hazards, Prevention and Mitigation of Industrial Explosions, Bergen, Norway, 10-14 June 2	Member of the Scientific Advisory Board and of the Best Paper Award Committee
2014	CISAP6 - 6 th International Conference on Safety and Environment in the Process & Power Industry, Bologna, 13-16 April 2014	Reviewer for the International Scientific Committee
2012	CISAP5- 5 th International Conference on Safety & Environment in Process & Power Industry, Milan, 3-6 June 2012	Reviewer for the International Scientific Committee
2004	Convegno GRICU 2004 Ischia, Napoli, 12-15 September 2004	Member of the Young Researchers Award Committee

IIIE–Editor/Reviewer Activity

Year	Institution	Function
2021	MDPI	Guest-Editor of the Topical Collection entitled "Women in Hydrogen Energy" in Energies journal
2020	MDPI	Guest-Editor of the Special Issue "Risk Assessment in Traffic and Transportation" in Applied Sciences journal
2020	MDPI	Editorial Board Member of Section "Hydrogen Energy" of Energies journal
2019	University of Padova	Reviewer of a scientific project submitted to the University of Padova
2019	Croatian Science Foundation	Reviewer of a scientific project submitted to the Croatian Science Foundation
2019	IAFSS Symposium Committee	Reviewer of papers submitted for the 13th International Symposium on Fire Safety Science (13th IAFSS Symposium).
2014	Elsevier	Reviewer of the book "Dust Explosion Dynamics" by Russell A. Ogle.
2012	University of Padova	Reviewer of a scientific project for young researchers
2009-Present	-	Reviewer of the following journals: AIChE Journal, Chemical Engineering Science, Journal of Hazardous Materials, Process Safety and Environmental Protection,

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		Industrial & Engineering Chemistry Research, Journal of Industrial and Engineering Chemistry, Journal of Loss Prevention in the Process Industries, Safety Science, International Journal of Hydrogen Energy, Fire Technology, International Journal of Mining Science and Technology, Tunnelling and Underground Space Technology, SRN Chemical Engineering, The Canadian Journal of Chemical Engineering, Journal of Membrane Science, Food and Bioprocess Technology: An International Journal, Food Chemistry, Journal of Food Processing and Preservation, International Journal of Food Science and Technology, LWT-Food science and Technology, Food Reviews International, Desalination, etc.
2009	University of Padova	Reviewer of a scientific project submitted to the University of Padova
2002	Elsevier	Guest Editor of the Special Issue "Environmental Catalysis: A Step Forward" Catalysis Today Vol 75, 1-4

Part IV – Teaching experience

IVA–Courses

Year	Institution	Course
a.a. 2020/2021	University of Naples Federico II	Fire and Explosion (3 ECTS, ING-IND/27) for 2nd level Master on Forensic Engineering
a.a. 2019/20- Present	Sapienza University of Rome	Process and Product Safety in the Chemical Industry (6 ECTS, ING-IND/27) (Course in English) for M.Sc. in Chemical Engineering and M.Sc. in Safety Engineering
a.a.2013/2014- Present	Sapienza University of Rome	Industrial Organic Chemistry (9 ECTS, ING-IND/27) for B.Sc. in Chemical Engineering
a.a.2013/2014- 2018/2019	Sapienza University of Rome	Process and Product Safety in the Chemical Industry (6 ECTS, ING-IND/27) for M.Sc. in Chemical Engineering and M.Sc. in Safety Engineering
a.a.2012/2013	Sapienza University of Rome	Management of hazardous chemicals (6 ECTS, ING-IND/27) for M.Sc. in Chemical

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		Engineering and M.Sc. in Safety Engineering
a.a.2009/2010-2012/2013	University of Salerno	Process and Product Safety in the Chemical Industry (6 ECTS, ING-IND/27) for M.Sc. in Chemistry
a.a.2007/2008	Tor Vergata University of Rome	Manufacturing Plant Safety (5 ECTS) for M.Sc. in Environmental and Land Engineering
a.a.2004/2005-2012/2013	University of Salerno	Industrial Chemistry for Food Industry (6 ECTS, ING-IND/27) for M.Sc. in Food Engineering and for B.Sc. in Chemical Engineering
a.a.2002/2003-2003/2004	University of Salerno	Waste Water Treatments (3 ECTS, ING-IND/27) for M.Sc. in Food Engineering
a.a 2001/2002-2004/2005	University of Salerno	Principles of Industrial Chemistry (3 ECTS, ING-IND/27) for B.Sc. in Chemical Engineering
a.a.2000/2001-2002/2003	University of Salerno	Process Safety and Environmental Protection in the Chemical Processes (3 ECTS, ING-IND/27) for M.Sc. in Chemical Engineering and M.Sc. in Environmental and Land Engineering

IVB–Lectures for Higher Education Courses

Year	Institution	Lecture
a.a.2019/2020	University of Naples Federico II	“Flammability properties of gases, liquids and solids”, “Fire propagation dynamics” and “Explosion Investigation” for 2nd level Master on Forensic Engineering
2019	Sapienza University of Rome	“Chemical reaction hazards and the risk of thermal runaway” for PhD course in Chemical Processes for Industry and Environment
a.a.2017/2018	University of Naples Federico II	“Explosion Investigation” for 2nd level Master on Forensic Engineering
a.a.2009/2010-2015/2016	University of Naples Federico II	“Flammability properties of gases, liquids and solids” for 2nd level Master on Forensic Engineering
a.a.2009/2010-2015/2016	University of Naples Federico II	“Fire propagation dynamics” for 2nd level Master on Forensic Engineering
a.a.2013/2014	Second University of Naples now University of Campania “Luigi Vanvitelli”	“Fire: combustion products and ignition sources. Fire extinction. Fire modelling. Effect of fire on people and structures” for 2nd level Master on Safety Engineering

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a.a.2009/2010-2011/2012	Second University of Naples now University of Campania "Luigi Vanvitelli"	"Major Accidents Risk" for 2nd level Master on Safety Engineering
a.a.2009/2010-2011/2012	Second University of Naples now University of Campania "Luigi Vanvitelli"	"Fire and Explosion Risk" for 2nd level Master on Safety Engineering

IVC– Invited Lectures

Year	Institution	Lecture
2021	CINEAS, Milan	"Lithium batteries: vulnerability to fire risk and property aspects" at Workshop AIG - Insurance Academy 22 June 2021
2018	Nanyang Technological University (Singapore)	"Failure probability of reinforced concrete buildings as consequence of hydrogen pipeline explosions" at the HYPOTHESIS XIII- HYdrogen - POWER THEoretical and Engineering Solutions International Symposium, Singapore, 24-27 July 2018
2018	Thinkershub AB	"Innovation trends in food drying and beverage dealcoholisation" at the World Biotechnology, Food & Agriculture Conference Stockholm, Sweden, 25-27 June 2018
2017	National Fire Corps, National Fire Academy (ISA), Rome	"Explosion Investigation: case studies" for the 9 th training course for directors of the National Fire Corps, Rome, 22 February 2017
2017	National Fire Corps, National Fire Academy (ISA), Rome	"Support of University and research centers on the investigation activity" at the Conference on Fire Investigation: State of the art and future developments, Rome, 22 March 2017
2016	Ministry of Defence - General Secretariat and National Direction Armaments	"Safety distances between building structures and process plant/critical infrastructure explosions" at the Explosive Safety Management and Risk Analysis Symposium, Città Militare della Cecchignola, 22 November 2016
2016	National Fire Corps, National Fire Academy (ISA), Rome	"The investigation of fires and explosions: Joint Commitment of National Fire Corps & Sapienza University of Rome" at the conference on Higher Safety Education: Twenty Years of Collaboration of the National Fire Academy with University, Research centers and Professional Orders, Rome, 26 November 2015

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2016	Order of the Engineer of Bologna	"Fire Investigation" for the Course for office and technical consultant in civil and criminal proceedings, Bologna, 14 May 2016
2015 - Present	Sapienza University of Rome	"Specific risk activities - Deposits of flammable liquids and alcohols" for the Professional specialization course on Fire Prevention
2014	University of Salerno	"Optimization of process parameters for quality dried products" for the Training course for experts in food preserving technologies financed by Project PON01_01397 PON2007-2013, Fisciano October-November 2014
2012	Order of the Engineer of Salerno	"Regulation 1907/2006/EC (R.E.A.C.H.): objectives, obligations and deadlines"
2010	Order of the Engineer of Salerno	"Optical radiation risk" for the Health and Safety Officer (RSPP) Course
2010	Order of the Engineer of Salerno	"ATEX" for the Health and Safety Officer (RSPP) Course

IVD– Ph.D. Thesis

Year	Institution	Function
2021	Norwegian University of Science and Technology	Member of the Committee for Federico Ustolin's PhD thesis and public lecture, titled: "Modelling of Accident Scenarios from Liquid Hydrogen Transport and Use"
2020-Present	Sapienza University of Rome	Supervisor of Sofia Ubaldi. PhD in Chemical Processes for Industry and Environment. Research title: "Fire risk management in solid waste management plants".
2019-Present	Sapienza University of Rome	Supervisor of Oladele Oluwamuyiwa PhD in Chemical Processes for Industry and Environment. Research title: "Quantitative risk assessment methodology for hydrogen-powered vehicles in tunnels"
2018-Present	Sapienza University of Rome	Supervisor of Maria Luisa Mele. PhD in Chemical Processes for Industry and Environment. Research title: "Study of safety issues of Lithium-ion batteries for their application in the automotive sector".
2016-2018	Sapienza University of Rome	Supervisor of Alessandra De Marco. PhD in Chemical Engineering. Research title: "Assessment of damage to people and

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2017-2019	University of Salerno	buildings as consequences of hydrogen pipeline accidents”. Member of scientific committee of Begum Önal. PhD in Chemical Engineering. Research title: "Drying of fruits and vegetables: Improvement of quality of nutritional properties of dried products and mathematical modelling".
2015-2017	Sapienza University of Rome	Supervisor of Renato Buonocore. PhD in Chemical Engineering. Dissertation title: “Optimization of drying food products: application to fruit”.
2014	Sapienza University of Rome	Reviewer of Yana Ruzmanova Thesis. PhD in Chemical Engineering. Dissertation title: “Production of TiO ₂ nanoparticles for photo catalysis applications”
2012-2015	University of Naples Federico II	Member of scientific committee of Anna Saliva. PhD in Chemical Engineering. Dissertation title: “Regeneration of catalytic diesel particulate filters”
2015	University of Udine	Reviewer of Andrea Dusso Thesis. PhD in Energy and Environmental Science. Dissertation title: “Decision support tools for fire emergency management”
2012-2014	University of Salerno	Member of scientific committee of Luca Malangone. PhD in Science and Technology for the Chemical, Pharmaceutical and Food Industry. Dissertation title: “Forest fire modelling”
2008-2010	Mediterranea University of Reggio Calabria	Co-tutor of Loredana Liguori. PhD in Biology applied to agrofood and forest systems. Dissertation title: “Innovation in the oenological field: partial and total dealcoholization of wines and alcoholic beverages”
2006-2008	University of Salerno	Member of scientific committee of Maria Grazia Meo. PhD in Chemical Engineering. Dissertation title: “On modelling fire and explosion accidents”
2005-2007	University of Salerno	Member of scientific committee of Giuseppina Matarazzo. PhD in Chemical Engineering. Dissertation title: “Novel catalytic systems for microwaves assisted soot oxidation”

Year	Institution	Function
a.a. 2018/2019	University of Naples Federico II	Advisor of Antonio Pannullo. Specialisation Thesis in Forensic Engineering. Title "Fires in waste storage and treatment plants"
a.a. 2018/2019	University of Naples Federico II	Advisor of Giovanni Russo. Specialisation Thesis in Forensic Engineering. Title "Lithium-ion batteries - risks of fire and explosion on board electric propulsion ships"
a.a. 2016/2017	University of Naples Federico II	Co-advisor of Stefano Scognamiglio. Specialisation Thesis in Forensic Engineering. Title: "Improvised explosive devices. Technologies, materials, uses and Back analysis".
a.a. 2016/2017	University of Naples Federico II	Co-advisor of Giovanni Maria Di Leva. Specialisation Thesis in Forensic Engineering. Title: "Explosion Investigation: a case study".
a.a. 2015/2016	University of Naples Federico II	Co-advisor of Andrea Porfidia. Specialisation Thesis in Forensic Engineering. Title: "Fires and explosions in ordinary and extraordinary maintenance operations"
a.a. 2013/2014	University of Naples Federico II	Co-advisor of Giuseppe Vitale. Specialisation Thesis in Forensic Engineering. Title: "Fire resistance of building materials: the wood"
a.a. 2011/2012	University of Naples Federico II	Co-advisor of Pierpaolo Gentile. Specialisation Thesis in Forensic Engineering. Title: "Forensic Reconstruction of Fire and Explosion Dynamics"
a.a. 2009/2010	University of Naples Federico II	Co-advisor of Giacomo Battipaglia. Specialisation Thesis in Forensic Engineering. Title: "Dust explosions in the food industry. Analysis of an explosion that occurred in a sugar factory".

Part V - Society memberships, Awards and Honors

Year	Title
2013	Top Cited Paper Award for 2011 and 2012 - Paper "Dust/gas mixtures explosion regimes" Powder Technology, 2011, 205, pp. 81-86
2012	Top Cited Paper Award for 2010 and 2011 - Paper "Experimental analysis of gas explosions at non-atmospheric initial conditions in cylindrical vessel" Process Safety and Environmental Protection, 2010, 88, pp. 341-349.

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2009	Member of AIF Association of Forensic Engineering
2008	Member of GRICU Chemical Engineering University Group
2007	Member of AIChE American Institute of Chemical Engineers
2006	Member of AIDIC Italian Association of Chemical Engineering
1996	Master thesis prize from "Kuwait Raffinazione e Chimica" for Master Thesis on "Coal reactivity in gasification processes: influence of pyrolysis conditions "

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2021 [PI]	Technical consultancy for the explosion that occurred on 12/09/2013 at the ILSAP plant of Lamezia Terme (n. 1983/13 R.G.N.R.)	Contract for professional service - I.L.S.A.P S.r.l. 1 year.	18.000 €
2021 [PI]	TG and DSC analysis on dust sample from leather process	Contract for analysis and commercial tests. Valentino SpA. 1 month.	1.300 €
2021 [PI]	Analysis of residues of flammable liquids on the fire residues of a pizzeria	Contract for analysis and commercial tests. Technical Consultant of the Judge. 1 month-	1.500 €
2020 [I]	Innovative bio-packaging to preserve quality and extend the shelf-life of fruits and vegetables	University Research Project 2020 Sapienza University of Rome. (n. prot RG120172B2872CB3). 1 year.	50.000 €
2020 [PI]	SDFS Satellite Driven Fire Simulator	Strategic Projects 2019 - POR FESR 2014-2020-Aerospace. (CUP: E84G20000150006) 1.5 year	23.500 €
2020 [PI]	Evolved gas analysis with FT-IR spectrometer for reactions and mechanisms studies	Fund for medium and large equipment of common interest for the university-Sapienza University of Rome (n. prot. MA220172B844644E)	62.000 €
2020 [PI]	Visiting Professor Frank Markert	Fund for Visiting Professors for research and teaching activities. Sapienza University of Rome. 3 months.	9.000 €
2020 [PI]	ORTOPACKHEALTH	Fund for innovative projects, including research and technological development in the field of the shelf life of	50.000 €

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		food products and their packaging, aimed at limiting waste and the use of surpluses. Ministry of Agriculture, Food and Forestry. 1 year.	
2020 [PI]	Technical consultancy for the explosion that occurred on 9/10/2018 at the chemical-physical plant of Reggio Emilia (case n. 2019/00233 R.G.N.R.)	Contract for professional service- Iren Ambiente S.p.A. 1 year.	20.000 €
2020 [PI]	Study and characterization of the reactions involved in the thermal runaway of Li-ion cells for the development of a consequences model	Research Contract with ENEA- Program Agreement 2019-2021 Ministry of Economic Development – ENEA -for the Research on Electrical System. 2 years.	60.000 €
2020 [PI]	HyResponder: European Hydrogen Train the Trainer Programme for Responders (G.A. 875089)	Horizon 2020. Coordinator: prof. S. Brennan, University of Ulster, UK. 3 years.	30.000 €
2019 [PI]	HyTunnel-CS (FCH-04-1-2018): PNR for safety of hydrogen driven vehicles and transport through tunnels and similar confined spaces (ID 826193)	Horizon 2020. Coordinator: prof. V. Molkov, University of Ulster, UK. 3 years.	75.000 €
2019 [PI]	Thermal abuse behaviour of high power Li-ion cells	University Research Project 2019 Sapienza University of Rome. (n. prot RP11916B7A294406). 1 year.	4.000€
2019 [PI]	ZEPROMEM: Integrated zero emission industrial membrane process development for low alcohol beer production and reuse of wastes	University Research Project 2018 (n. prot. RG11816435A6C3CA). 3 years.	53.800 €
2017 [PI]	Funding for basic activities related to research (FFABR)	ANVUR Public notice n. 20/2017, 15-06- 2017. 1 year.	3.000 €
2017 [PI]	Sustainable electrical mobility - the recharge of electric vehicles: HRR measurements for modeling safety distances.	Research Contract with ENEA-Program Agreement 2015-2017 Ministry of Economic Development – ENEA -for the Research on Electrical System. 1 year.	30.000 €
2017 [I]	Phytochemical characterization of beer by HPLC-PDA-ESI-MS/MS: a tool to monitor a new membrane	University Research Project 2017. (n. prot RP11715C63A2EC44)	4.000 €

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	process for the production of low-alcohol beer with sensorial and antioxidant properties.	Scientific Responsible: prof R. Petrucci. 1 year.	
2016 [PI]	Sustainable electrical mobility - the recharge of electric vehicles: preliminary study for modeling safety distances.	Research Contract with ENEA-Program Agreement 2015-2017 Ministry of Economic Development – ENEA -for the Research on Electrical System. 1 year.	40.000 €
2016 [I]	Concentration of biobutanol from streams coming from ABE processes through membrane technologies (BBMEM)..	University Research Project 2016. Scientific Responsible prof M. Stoller. 3 years.	10.000 €
2016 [PI]	Study of prevention and protection systems for fire and explosions in silos for combustible dust.	Scholarships funded by Fam. Torregiani – National Fire Corps. (2 months).	5.800 €
2016 [PI]	Modeling study for the assessment of the environmental impact of the I.L.S.A.P. of Latina and its influence on the air quality of the surrounding area	Research Contract with I.L.S.A.P S.r.l (6 months)	15.000 €
2015 [I]	Hexavalent chromium reduction in contaminated soil by nanoscale zero-valent iron.	University Research Project 2015. (n. prot. C26H15L9JS). Scientific Responsible: prof L. Di Palma. 1 year.	31.000 €
2014 [I]	Engineering of process for valorization of effluent from an anaerobic agro-food waste digester.	University Research Project 2014. (n. prot. C26A145HWH). Scientific Responsible: prof S. Cerbelli. 1 year.	10.000 €
2013 [PI]	Membrane technologies for recovery and separation of volatile fatty acids in integrated biorefining processes.	University Research Project 2013. (n. prot. C26A13CT8N). 1 year.	12.000 €
2013 [I]	Biotechnology for sustainable development: applications and health and safety at work. Scientific.	Project CCM 2001. Responsible: dott. B. Pietrangeli (INAIL). 2 years.	
2012 [PI]	Analysis and mitigation of consequences of accident scenarios in the Transport of Hazardous Substances	University Research Project. FARB2012. 2 years.	
2012 [I]	Transfer of traditional canned tomato in innovative containers for market modernization. Study on the use of waste of the tomato industry for the production of fuel	PON 2007-2013. Scientific Responsible: prof. S. Porretta. 3 years	

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	oil, cosmetic and functional substances (TOM &CHERRY)		
2012 [I]	Process optimization of conservation of fresh chestnuts with innovative technologies in biodegradable packaging (OTTICA)	Misura 124 PSR Campania 2007-2013. Scientific Responsible: prof. M. Di Matteo. 3 years	
2011 [I]	Technologies and environmental monitoring for the sustainability of large areas (TeMASAV).	POR Campania FSE 2007/2013 – Networks of excellence. Scientific Responsible: Prof. G. Manfredi. 3 years.	
2011 [I]	Study on wildfires	University Research Project. FARB2011. Scientific Responsible: prof. S. Vaccaro. 2 years.	
2010 [I]	An Inherently Safer Approach to Dust Explosion Risk Reduction.	Strategic Grant #396398 of Natural Sciences and Engineering Research Council of Canada. Coordinator: prof. P. Amyotte, Dalhousie University, Canada. 3 years.	488 000 \$
2010 [I]	Network for the protection and management of agro-food genetic resources of Campania (AGRIGENET).	Misura 214 PSR Campania 2007. Scientific Coordinator: Dr. M. Scortichini. 2 years	
2009 [I]	Study on risk in confined spaces.	University Research Project. FARB2009. Scientific Responsible: prof. S. Vaccaro. 2 years.	
2007 [I]	New catalytic approaches and innovative regeneration techniques for the control of nanoparticles emissions from diesel engines.	PRIN MIUR 2007. Scientific Coordinator: prof. P. Ciambelli. 2 years.	48 800 €
2007 [I]	Novel nanostructured catalysts for heterogeneous catalytic reactions.	University Research Project FARB2007. Scientific Responsible: prof. V. Palma. 2 years.	
2006 [I]	Microwave assisted catalytic systems for diesel exhaust treatment.	University Research Project. FARB2006. Scientific Responsible: prof. P. Ciambelli. 2 years	

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2005 [I]	Structured catalysts for the combined abatement of soot and NO _x .	University Research Project. FARB2005. Scientific Responsible: prof. P. Ciambelli. 2 years	
2005 [PI]	Analysis of dust explosion risk in food industry	Regione Campania L.R. 5/02. 1 year.	25.000 €
2003 [I]	Novel catalytic systems for the assisted abatement of soot particulate.	PRIN MIUR 2003. Scientific Coordinator: prof. P. Ciambelli. 2 years	98.700 €
2003 [I]	Devices for the catalytic control of diesel exhaust emissions.	University Research Project. FARB2003. Scientific Responsible: prof. P. Ciambelli. 2 years	
2002 [I]	Study of catalytic systems for the autothermal reforming of light hydrocarbons.	PRIN MIUR 2002. Scientific Coordinator: prof. V. Specchia. 2 years.	85.200 €
2002 [I]	Innovative technologies employing supercritical fluids for production of nanocatalysts and reaction of catalytic partial oxidation of hydrocarbons in supercritical CO ₂ .	Regione Campania L.R. 41/2000. Scientific Responsible: prof. P. Ciambelli. 2 years.	
2002 [I]	Regional Centre of Competence on Agrofood Productions	P.O.R. Campania FSE 2000/2006. Scientific Responsible: prof. G. Ferrari. 3 years.	
2000 [PI]	Soot particulate abatement assisted by microwaves	CNR Agenzia 2000. 1.5 year.	18.000.000 lire
2000 [I]	Combustion Characterization of Substitute Fuels for Co-Firing with Pulverised Coal.	European Project Bioflam EC Contract No: ENK5-1999-00004. Coordinator: WL van de Kamp, IFRF . 5 years.	
1996 [I]	Performance Prediction in Advanced Coal Fired Boilers.	European Project Joule3 EC Contract No JOF3 - CT95 - 0005. Coordinator: P.A. Roberts, IFRF. 2 years.	

Part VII – Technology transfer

Year	Title	Inventors
July 31, 2015	Italian Patent N. 0001417256 Equipment for flammability tests and explosivity of uniformly disperse dust	Almerinda Di Benedetto, Andrea Bizzarro, Paola Russo, Roberto Sanchirico, Valeria Di Sarli

Part VIII – Research Activities

Paola Russo

Keywords

Brief Description

	Research interest and skills are in:
	Fire and explosion safety
	• CFD modelling and simulations, including fires in tunnels;
	• Quantitative risk assessment for critical infrastructures, including gas pipelines;
	• Fire experiments on Lithium-ion batteries;
	• Experimental analysis of gas, dust and hybrid explosions;
	• Analytical modelling of explosion mitigation and protection systems for industrial equipment;
	• Modelling and simulations of propagation of wildland fires, etc.
	Food Engineering
	• Application of membrane processes for the dealcoholisation of beverages (i.e. wine, beer);
	• Development of chemical and physical pretreatments for the production of high quality dried food.
	Environmental catalysis and energy production
	• Catalytic abatement of soot from diesel engines
	• Combustion of coals, biomasses and their blends.
	Below it is possible to find a brief descriptions of research activities.
	<u>Fire safety in tunnels</u>
CFD modelling	With regard to fire safety in tunnels and similarly confined spaces, the research focused on modelling and simulation of large-scale fires, especially for determining the environmental conditions along evacuation paths. A people evacuation model coupled with CFD model for fire simulation was used for the analysis of evacuation and rescue process from a road tunnel. The results obtained provide information for the design of procedures and technical measures (i.e. emergency exits) for safe evacuation of people.
Evacuation model	
Fire scenario	
People evacuation	
Tunnel Fire	
Intervention procedure	
Hydrogen	
	At present the research is focused on the safety of hydrogen driven vehicles through tunnels and similarly confined spaces. In particular:
	- the development of a methodology for quantitative risk assessment of hydrogen use in tunnels and underground parking is studied, employing new models for consequences analysis. This activity is included in HyTunnel-CS project (FCH-04-1-2018) which has been selected for funding under the Horizon2020 framework programme (start date 1 March 2019).
	-the development of procedures for the intervention of first responders in the case of H ₂ vehicle accident. This activity is included in HyResponder project (FCH-04-1-2019) which has been selected for funding under the Horizon2020 framework programme (start date 1 January 2020).
	<u>Fire safety of Lithium-ion batteries</u>
Battery pack	Lithium-ion batteries are the preferred storage technology suitable for a variety of energy and power demanding applications for both stationary applications and electromobility. However, safety remains a significant concern, as battery failure causes a rapid heat release leading to a process called thermal runaway. My recent studies on this subject have focused on
Cone Calorimeter	
Electric vehicle	
Fire	
Li-ion cell	

Paolo Fies

Radiative flux	thermal abuse tests performed on single Li-ion cell used for electric vehicles (i.e. Tesla). Tests on single cell have been carried out in a cone calorimeter changing the state of charge of the cells and the radiative flux of the conical heater, in order to assess the ignition and combustion characteristics. The volatile organic compounds emitted during the tests have also been measured. Further tests are in progress in a test apparatus developed to analyse the conditions at which thermal runaway occurs and to measure the concentration of toxic exhausts (i.e., HF) by a FT-IR spectrometer. Screening tests for fire extinguishing agents for Lithium-ion batteries have also been performed in collaboration with the National Fire Corps. This activity is funded by the Italian Ministry of Economic Development, (RSE PAR 2015-2017, 2019-2021) in the frame of a Cooperation Agreement with ENEA.
State of charge	
Thermal runaway	
Gas pipeline	<u>Quantitative risk assessment for critical infrastructures</u>
Gas explosion	Pipeline systems are a key element of the oil and gas industry infrastructure, enabling timely and efficient transportation of different products. In the case of an accident gas pipeline may result in major damage even to buildings located far away. A quantitative risk assessment procedure has been developed for the estimation of the annual probability of direct structural damage to reinforced concrete buildings associated with high-pressure natural-gas pipeline explosions. The methodology has been recently further developed for hydrogen-gas pipelines and applied to both reinforced concrete and tuff stone masonry buildings.
Hydrogen	
Natural gas	
Pressure–impulse diagrams	
Quantitative risk assessment	
Structural damage	
	<u>Dust and hybrid mixture explosions</u>
CFD modelling	In this topic attention was paid toward the basic understanding of the behavior of combustible dusts and hybrid mixtures (i.e., mixtures of flammable gas/vapor and dust) with the objective of both preventing the occurrence and mitigating the consequences of such events. The explosion behavior of gas, dust and hybrid mixtures was investigated both experimentally and theoretically. Mathematical models for predicting explosivity parameters were developed. This activity was founded by Regione Campania L.R.5/02-2005 and by Natural Sciences and Engineering Research Council (NSERC) of Canada.
Deflagration index	Finally, since both experimental and CFD modelling results suggest that the measurement of the explosion and flammability parameters according to the standard procedure may lead to misleading results, a novel dust dispersion system has been proposed in order to avoid failure in measurement of dust explosion/flammability parameters (Italian Patent N. 0001417256 for an Equipment for flammability tests and explosivity of uniformly disperse dust)
Dust dispersion	
Dust explosion	
Explosion vessel	
Hybrid explosion	
Mathematical modelling	
Particle size	
Process Safety	
Turbulence	
Antioxidant activity	<u>Application of membrane processes for the dealcoholisation of beverages</u>
Aroma	Research in the field aims to the production of beverages (i.e. wine, beer) with low-alcohol content combined with no or limited loss of healthy components and high sensorial qualities, that could have a high impact on the global market. Among the various methods, a modified osmotic
Beer	
Dealcoholization	

Paolo Fusco

Membrane	<p>distillation has been investigated in order to minimize the loss of volatile compounds and reduce the water consumption with a consequent decreasing of the environmental impact of the process.</p> <p>This activity was funded by Sapienza University of Roma - University Research Project in 2017 and 2019.</p> <p><u>Development of chemical and physical pretreatments for the production of high quality dried food.</u></p> <p>The chemical and sensorial transformations that occur during the drying process influence the end-product quality and have a decisive influence on its attractiveness to consumers. The research on this subject investigates the changes in the properties of foods that occur with processing by means of advanced techniques (i.e. NMR, MRI). A diffusion model considering the shrinkage during drying has been developed. Moreover, it is focused on the development of novel pretreatments of fruits and vegetables which can inactivate enzymes, enhance drying process and improve quality of dried products, without inducing undesirable quality of products, e.g., loss of texture, soluble nutrients, pigment and aroma. More recent activity is focused on the study of bio-packaging able to prolong the shelf life of minimally processed foods and dried foods. This activity was founded by Ministry of Agriculture, Food and Forestry and by Sapienza University of Roma - University Research Project in 2020.</p> <p><u>Environmental catalysis and energy production</u></p> <p>My previous research activity area was in environmental catalysis and energy production. With regard to the first, the activity concerned the study of catalytic systems for the abatement of soot particulate from diesel engine exhaust. As a result, a prototype for bench-scale engine tests was realized. With regard to the energy production, the research was focused on the study of the performances of different solid fuels: coals, biomasses and their blends.</p>
Osmotic distillation	
Phenolic compounds	
Wine	
Diffusion coefficient	
Drying kinetics	
Fruit	
Microstructure	
Modelling	
Pretreatment	
Shrinkage	
Vegetable	
Water compartments	
Biomass	
Catalytic filter	
Coal Blends	
Combustion	
Diesel exhaust	
Soot abatement	

Part IX – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Articles [international]	88	Scopus (27/10/2021)	1996	2021
Conference Papers [international]	30	Scopus (27/10/2021)	1996	2021
Book Chapters [scientific]	2	Scopus (27/10/2021)	1996	2021
Editorial	2	Scopus (27/10/2021)	1996	2021
Abstract Report	1	Scopus (27/10/2021)	1996	2021
Letter	1	Scopus (27/10/2021)	1996	2021
Note	1	Scopus (27/10/2021)	1996	2021
Review	1	Scopus (27/10/2021)	1996	2021
TOTAL	126	Scopus (27/10/2021)	1996	2021

Paolo Fiesi

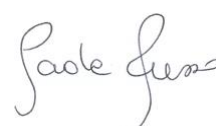
Total Impact factor	193.229
Number of Products with IF	103
Average Impact factor per Product	1.876
Total Citations	2387 Scopus (27/10/2021)
Average Citations per Product	19
Hirsch (H) index	28 Scopus (27/10/2021)
Normalized H index*	1

*H index divided by the academic seniority.

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Part X– Selected Publications

- A1 Petrucci, R., Di Matteo, P., Sobolev, A.P., Liguori, L., Albanese, D., Proietti, N., Bortolami, M., **Russo, P.**
Impact of Dealcoholization by Osmotic Distillation on Metabolic Profile, Phenolic Content, and Antioxidant Capacity of Low Alcoholic Craft Beers with Different Malt Compositions
(2021) Journal of Agricultural and Food Chemistry, 69 (16), pp. 4816-4826. Cited 1 time. 5.279
DOI:10.1021%2facsc.1c00679
- A2 Senadeera, W., Adiletta, G., Önal, B., Di Matteo, M., **Russo, P.**
Influence of different hot air drying temperatures on drying kinetics, shrinkage, and colour of persimmon slices
(2020) Foods, 9 (1), art. no. 101. Cited 11 times. IF 4.350
DOI:10.3390%2ffoods9010101
- A3 Önal, B., Adiletta, G., Crescitelli, A., Di Matteo, M., **Russo, P.**
Optimization of hot air drying temperature combined with pre-treatment to improve physico-chemical and nutritional quality of ‘Annurca’ apple
(2019) Food and Bioprocess Technology, 115, pp. 87-99. Cited 24 times. IF 3.726
DOI: 10.1016%2fj.fbp.2019.03.002
- A4 **Russo, P.***, De Marco, A., Parisi, F.
Failure of reinforced concrete and tuff stone masonry buildings as consequence of hydrogen pipeline explosions
(2019) International Journal of Hydrogen Energy, 44 (38), pp. 21067-21079. Cited 6 times. IF 4.939.
DOI: 10.1016/j.ijhydene.2019.01.225
- A5 Proietti, N., Adiletta, G., **Russo, P.***, Buonocore, R., Mannina, L., Crescitelli, A., Capitani, D.
Evolution of physicochemical properties of pear during drying by conventional techniques, portable-NMR, and modelling
(2018) Journal of Food Engineering, 230, pp. 82-98. Cited 13 times. IF 3.625.
DOI: 10.1016/j.jfoodeng.2018.02.028
- A6 **Russo, P.***, Parisi, F.
Risk-targeted safety distance of reinforced concrete buildings from natural-gas transmission pipelines
(2016) Reliability Engineering and System Safety, 148, pp. 57-66. Cited 26 times. IF 3.153.
DOI: 10.1016/j.res.2015.11.016
- A7 Adiletta, G., **Russo, P.***, Senadeera, W., Di Matteo, M.
Drying characteristics and quality of grape under physical pretreatment
(2016) Journal of Food Engineering, 172, pp. 9-18. Cited 66 times. IF 3.099.
DOI: 10.1016/j.jfoodeng.2015.06.031
- A8 Liguori, L., De Francesco, G., **Russo, P.***, Perretti, G., Albanese, D., Di Matteo, M.
Quality Attributes of Low-Alcohol Top-Fermented Beers Produced by Membrane Contactor
(2015) Food and Bioprocess Technology, 9 (1), pp. 191-200. Cited 25 times. IF 2.574.
DOI: 10.1007/s11947-015-1612-y



- A9 Sanchirico, R., **Russo, P.***, Di Sarli, V., Di Benedetto, A.
On the explosion and flammability behavior of mixtures of combustible dusts
(2015) Process Safety and Environmental Protection, 94 (C), pp. 410-419. Cited 26 times. IF 2.078.
DOI:10.1016/j.psep.2014.09.007
- A10 Liguori, L., De Francesco, G., **Russo, P.***, Perretti, G., Albanese, D., Di Matteo, M.
Production and characterization of alcohol-free beer by membrane process
(2015) Food and Bioproducts Processing, 94, pp. 158-168. Cited 35 times. IF 2.687.
DOI: 10.1016/j.fbp.2015.03.003
- A11 Liguori, L., **Russo, P.***, Albanese, D., Di Matteo, M.
Evolution of quality parameters during red wine dealcoholization by osmotic distillation
(2013) Food Chemistry, 140 (1-2), pp. 68-75. Cited 49 times. IF 3.259.
DOI: 10.1016/j.foodchem.2013.02.059
- A12 Caliendo, C., Ciambelli, P., De Guglielmo, M.L., Meo, M.G., **Russo, P.**
Simulation of fire scenarios due to different vehicle types with and without traffic in a bi-directional road tunnel
(2013) Tunnelling and Underground Space Technology, 37, pp. 22-36. Cited 35 times. IF 1.589.
DOI: 10.1016/j.tust.2013.03.004
- A13 **Russo, P.***, Adiletta, G., Di Matteo, M.
The influence of drying air temperature on the physical properties of dried and rehydrated eggplant
(2013) Food and Bioproducts Processing, 91 (3), pp. 249-256. Cited 42 times. IF 2.285.
DOI: 10.1016/j.fbp.2012.10.005
- A14 Di Benedetto, A., **Russo, P.**, Sanchirico, R., Di Sarli, V.
CFD simulations of turbulent fluid flow and dust dispersion in the 20 liter explosion vessel
(2013) AIChE Journal, 59 (7), pp. 2485-2496. Cited 61 times. IF 2.581.
DOI: 10.1002/aic.14029
- A15 Di Benedetto, A., Garcia-Agreda, A., **Russo, P.***, Sanchirico, R.
Combined effect of ignition energy and initial turbulence on the explosion behavior of lean gas/dust-air mixtures
(2012) Industrial and Engineering Chemistry Research, 51 (22), pp. 7663-7670. Cited 49 times. IF 2.206.
DOI: 10.1021/ie201664a
- A16 Di Benedetto, A., **Russo, P.***, Amyotte, P., Marchand, N.
Modelling the effect of particle size on dust explosions
(2010) Chemical Engineering Science, 65 (2), pp. 772-779. Cited 107 times. IF 2.61.
DOI: 10.1016/j.ces.2009.09.029

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