

Simona Silvia Merola

Orcid ID 0000-0003-3019-0610

ID Scopus 22135570300

ID Expert for EU Commission EX2006C134658

Current Position:

Senior Researcher (tenured position 2020 - today)

Institute of Science and Technology for Sustainable Energy and Mobility
CNR National Research Council (Naples - Italy).

Previous position

Senior Researcher (tenured position)

2010- 2020 Istituto Motori – CNR National Research Council (Naples - Italy).

Researcher (tenured position)

2001- 2010 Istituto Motori – CNR National Research Council (Naples - Italy).

Education:

Ph.D. March 2001

Department of Chemical Engineering - University of Naples “Federico II”, Italy

Title: “Detection of particulate matter at internal combustion engine exhausts”

Magister Degree “Summa cum Laude” May 1995

Department of Physics Science - University of Naples “Federico II”, Italy

Title: “Study of de-excitation mechanisms of atomic Ne metastable levels for two-photons laser spectroscopy”.

Scientific Employment

Guest Scientist

College of Engineering - Wayne State University of Detroit (USA) –2006

Theme: Optimization of the optical set-up for the investigation of combustion process in transparent common rail engine.

Research Associate

Laboratorium fur Festkorperphysik - ETH Zurich (CH) – 1999

Theme: Detection of nanoparticles by different instrumentation in urban air.

Research Associate

Department of Chemical Engineering at the University of Naples, Italy

July 1997 – December 1997. Theme: Development of optical technique based on light scattering for real time monitoring of inorganic compounds properties ”.

Research scholarship

Normative and Environment Division of Istituto Motori - National Research Council of Naples, Italy

July 1996 – June 1997 . Theme: Optical monitoring and control of vehicle pollutant emissions”

Awards and Scientific Recognitions

- 2003 _ **SAE International** Best Speaker Recognition at SAE 2003 World Congress & Exhibition, March 2003, Detroit, MI, USA, Session: Emission Measurement & Testing.
- 2004 _ **Italian National Research Council (CNR)** Scientific Recognition for Researcher 2001-2003
- 2005 _ **SAE International** Member Service Award 2001-2005
- 2005 _ **Italian National Research Council (CNR)** Scientific Recognition for Young Researcher 2005
- 2009 _ **SAE International Recognition** for the Dedication and Leadership in the International Section Activities
- 2010 _ **SAE International Member Service Award** 2001-2010
- 2015_ **SAE International Recognition** for the Organization of Technical Sessions in Powertrain, Fuel & Lubricants Meeting
- 2017_ **Award for High-quality paper** at Small Engine Technology Conference SETC2017, Jakarta (Indonesia)
- 2018 _ **Outstanding Reviewer for Journal of Energy Engineering.** ASCE_American Society of Civil Engineers
- 2019_ **Outstanding Reviewer Award** from Energies (ISSN 1996-1073, MDPI journal)
- 2019_ **Eminent Reviewer Award** from Betham Science Publishers

- 2019 _ **Reviewer recognition** for the valuable contribution to the quality of the journal “Polish Journal of Environmental Studies” (ISSN: 1230-1485)
- 2019 _ **SAE International Contributor of the Year 2019**
- 2019 _ **Award for High-quality paper** at Small Engine Technology Conference SETC2019, Hiroshima (Japan)
- 2019 _ **Outstanding Reviewer Awards for *Energies* MDPI _ IF(2018) 2.707** ISSN 1996-1073

Project Reviewer and Rapporteur activities

- MIUR _Italian Ministry of Education, University and Research_ FIRB Futuro in Ricerca 2012
- Israel Science Foundation, ISF 2014.
- Romanian Executive Agency for Higher Education, R&D and Innovation Funding PD2019 _RUTE2014
- Innovation Fund Denmark for Large Scale Projects 2015
- European Commission and EUREKA for EUROSTARS 2 2015
- National Authority for Scientific Research and Innovation of the Romanian Government _ OPC-2015
- European Commission for H2020_CLEANSKY CFP3 2016
- Grant for Division of Research & Graduate Studies of United Arab Emirates University 2016
- European Commission for H2020_CLEANSKY CFP4 2016
- Romanian Executive Agency for Higher Education, R&D and Innovation Funding PED 2016
- European Commission and EUREKA for EUROSTARS 4 2017
- Grant of United Arab Emirates University 2017
- Blue Sky Research from University of Pavia (Ita) 2017
- Innovation Fund Denmark Projects 2017
- European Commission for H2020_CLEANSKY CFP6 2017
- European Commission for H2020_Small and Medium-sized Enterprises – EASME 2018
- FNRS Bourses et Mandats/Grants and Fellowships 2018
- Innovation Fund Denmark for Grand Solution Projects 2018
- European Commission and EUREKA for EUROSTARS 6 2018
- Comisión Nacional de Investigación Científica y Tecnológica Chile _ CONICYT 2018
- European Commission for H2020_CLEANSKY CFP8 2018
- MISE _ Italian Ministry of Economic Development _ Industria Sostenibile FRI _ 2018-2021
- Poland National Science Centre _ OPUS 2018
- European Commission for H2020_CLEANSKY CFP10 2019
- MISE _ Italian Ministry of Economic Development _ Accordo Innovazione _ 2019-2022
- Romanian Executive Agency for Higher Education, R&D and Innovation Funding PD2019 e TE2019
- Ministry of Education and Science of the Republic of Kazakhstan _ Young scientists technical research 2020-2022
- FAR 2021 - Progetti Interdisciplinari Mission Oriented “Progetti NODO” 2021
- Romanian Executive Agency for Higher Education, R&D and Innovation Funding PCE2021 e TE2021

Direct responsibility and/or participation in

European Project

- **EU project PSICO-DEXA** _ CONTRACT n° G6RD-CT-1999-00038 PROJECT n° GRD1-1999-11154 (Particle Size and Composition Measurements for Diesel Exhaust Aftertreatment)
- **EU project PARTSIZE** _ CONTRACT n° ENK6-CT-2001-00534 PROJECT n° NNE5-2001-00108 (Control of Soot Particle Size by Means of Simulation and Measurement)
- **EU project MIN-KNOCK** _ CONTRACT n° ENK6-CT-2002 PROJECT n° NNE5-2002 (Control of Knock by Means of Simulation and Measurement in Gasoline Engine).
- **COST Action FP1306** _ Valorisation of lignocellulosic biomass side streams for sustainable production of chemicals, materials & fuels using low environmental impact technologies. (2014-2018)
- **ETNA2020 Academy** _ The network of the Horizon 2020 National Contact Points for ‘Smart, Green and Integrated Transport’

National Governative Project

- **Cluster C20** - Eco-compatible Technologies “Development of i.c. engines suitable for 2005 emission normative with low fuel consumption” (1999-2002).
- **FIRB - DM25791** “Innovative technologies for the reduction of fuel consumptions and for the improvement of specific performances in high performance engines” (2007-2010)

- **FIRB - DM26815** “Research, planning, development and experimentation on Direct Injection motorization for low consumption and low environmental impact two-wheels vehicles, fuelled with liquid phase gasoline and with alternative fuel” (2007-2010)
- **PON01_02211 MAIR** - Multiair Evolution - Next Generation Ultra low CO2 Spark Ignition Powertrain. (2011-2013)
- **MIT - Fincantieri- CNR** " Nave ad Alta Efficienza e Generazione Elettrica Innovativa”
- **POR CAMPANIA FESR 2014/2020 _ VEDO** - Design and realization of EGR valves with integrated digital diagnostics (2018-2020)

Industry Funded Project

- **ST Microelectronics spa** - Realization of Pressure Sensor in SiC for Innovative Control System of Diesel Engine (2000-2002)
- **CRF_Research Center of FIAT spa** - Evaluation of fuel injection strategies control on NO formation inside Common Rail Diesel engine. (2001-2003)
- **ELDOR spa** - Analysis of Misfiring By Means of Optical Investigation in Gasoline engine (2002-2003)
- **ST Microelectronics spa** - Realization of Pressure Sensor for the Control of Diesel Combustion Process (2002-2004)
- **ELASIS spa Research Center of FIAT** - Optical Investigation of Particle Size and Composition at Gasoline Engine Exhaust (2004-2005)
- **Ferrari SpA** - Analysis of ignition in high-tech SI engine by spectroscopic techniques (2004-2005)
- **Ippocratica spa** - Development of optical diagnostics for measuring IC engine exhaust emissions (2005-2006)
- **ELASIS spa Research Center of FIAT** - Analysis of combustion process in-cylinder turbocharger SI engine by optical techniques (2006)
- **Ferrari SpA** - Analysis of turbulence effects on ignition in high-tech SI engine by optical techniques”(2006-2007)
- **Piaggio SpA** “Combustion process analysis in a S.I. engine in normal and abnormal operating conditions by optical techniques and UV spectroscopy” (2007)
- **ST Microelectronics** “EGR control through the optimisation of particles dimensions and CO2 – NOx emissions for a new generation of diesel engines (Euro V and over)” (2006-2007)
- **Piaggio SpA** “Combustion process analysis in a S.I. engine” (2007)
- **ST Microelectronics** “Diagnostics for the development of new technologies for the combustion process control in new generation S.I. engines” (2007-2008)
- **GM_Powertrain _ DAT117**: Evaluation of the HC-vaporizer benefits on PM reduction at the exhaust of a small-diesel engine equipped with DOC+DPF after-treatment device (2011-2012)
- **Eldor spa** “Optical characterization of plasma-assisted ignition in spark-ignition engines” (2013-2014)
- **Eldor spa** “OH diagnostic of combustion due to plasma-assisted ignition in spark-ignition engines” (2015)
- **Eldor spa** “Characterization of a plasma ignition system in a s.i. engine through ion current diagnostic” (2016-2019)

Associations and Scientific Organizations

- **Treasurer** 2001 - 2005 of SAE_NA Italian section of SAE Int. (International Society of Automotive Engineers)
- **Secretary** 2003- 2005 of SAE_NA Italian section of SAE Int.
- **Member** of SAE Int. (International Society of Automotive Engineers) since 2001
- **Senior member** of SCIENCE and Engineering Institute (SCIEI) since 2013
- **Member** of SIA (Societe Des Ingenieurs De L'automobile) 2013
- **Member** of Gruppo CNR _ S&T Foresight for Horizon2020 since 2013
- **Member** of DAAAM International 2019
- **Senior member** of Universal Association of Civil, Structural and Environmental Engineers since 2019

Editorial activity and Standards committee

- **Expert & Editorial Review Board Member _ World Academy of Science, Engineering and Technology (WASET)** since 2014
- **Editorial Board Member of Int. Journal of Automotive Engineering and Technology (IJAET)** since 2013
- **Associate Editor DOAJ_ Directory of Open Access Journals**, since 2014
- **Editorial Board Member of Trends in Renewable Energy (ISSN: 2376-2136)** since March, 2015.
- **Review Editor** for the journal **Engine and Automotive Engineering of** Frontiers in Mechanical Engineering, since 2014

- **Editorial Board Member of Advances in Automotive Engineering (AAE)**, International journal of KAIST_ Korea Advanced Institute of Science & Tech. since 2016
- **Member of SAE Technical Committee E-33 In-Flight Propulsion Measurement** since May 2017
- **Member of SAE Technical Committee G-48 System Safety** since June 2017
 - **Associate Editor SAE Journal of Engines** (ISSN 19463936, Coverage 2009-ongoing) since June 2017
- **Reviewer Panel member of Bentham journal on Current Alternative Energy** since November 2017
 - **Editorial Board Member of Progress in Energy & Fuels** (ISSN(P): 2251-2640) since April 2018
 - **Editorial Board Member of International Journal of Mechanical Engineering and Applications** ISSN Print: 2330-023X since May 2018
 - **Advisory Board Member of Taylor & Francis Energy Sources, Part A: Recovery, Utilization, and Environmental Effects, IF2017_0.55** since January 2019
 - **Reviewer Board Member of Energies MDPI _ IF(2018) 2.707 ISSN 1996-1073** since January 2019
 - **Member of FISITA Database of Experts** – since May 2918
 - **Editorial Board Member of Journal "Current Chinese Science"** – since January 2020
 - **Member of SAE Systems Sensors Committee**
 - **Advisory Board Member of SAE MobilityRxiv®** - since September 2021

Scientific committee

- **Member of EU Working Group "End Use" ETIP Bioenergy** since 2015
- **Member of SAE Colwell Merit Award** since 2017
- **Member of SETC2017-2018 Best papers committee**
- **Member of SAE Int. Engine Combustion Committee** since 2016
- **Member of SAE Int. Fuel & Lubricants Committee** since 2018
 - **Member of SAE Int. New Engines, Actuators, and Components Committee** since 2018
 - **Member of Program Committee _ World Congress on Renewable and Non-Renewable Energy** since 2019

PhD Examination Board and Teaching Assignments

- Graduated and PhD student Course at **CMT-Motores Térmicos - Universitade de Valencia (ES) –2008**; Theme: Optical diagnostics of fuel injection and combustion process in-cylinder and at the exhaust of the SI engines.
- Excellence PhD course at Politecnico of Torino (Ita)– **2008; 2012 ; 2014**; Theme: Optical diagnostic of fuel injection and combustion processes in spark ignition engines
- **Doctoral School of Politecnico di Torino (Italy)** – PhD in “Energetics”, Candidate D. Iemmolo XXIX Cycle
- **Doctoral School of University of Perugia (Italy)** – PhD in “Industrial and Information Engineering” XXX Cycle Candidate A. Cimarello
- **Doctoral School of Technische Universiteit Eindhoven (NL) 2019** “Cum Lauda Committee” Noud Maes Thesis
- **Doctoral School of University of Perugia (Italy)** –PhD in “Industrial and Information Engineering” XXXII Cycle” Candidate V. Cruccolini _ 2020
 - **Doctoral School of CMT-Motores Térmicos (Valencia – Spain)** - J. Javier López, Thesis _ 2020

Paper reviewer for

- ACS Publications (Energy & Fuels, Environment Science and Technology)
- Bentham Science (Current alternative Energy)
- Elsevier (Applied Energy Applied Thermal Engineering, Combustion and Flame, Energy, Energy Conversion and Management, Experimental Thermal and Fluid Science, Fuel, International Journal of Thermal Sciences, Renewable Energy, International Journal of Vehicle Design, Fuel Processing Technology, Bioresources technology)
- Hindawi Publishing Corporation (Journal of Combustion, Journal of Fuels, Journal of Energy)
- IOP Science Pub. (Measurement Science and Technology)
- MDPI Pub. (Energies, Applied Sciences, Land, Sustainability, Sensors)
- SAE International (Society of Automotive Engineers)
- SAGE Publication (Journal of Engine Research, Proceedings of the Institution of Mechanical Engineers_Part D: Journal of Automobile Engineering)
- Springer Ed. (Experiments in Fluids, International Journal of Automotive Technology, International Journal of Energy and Environmental Engineering)

Active participation at International Conference as:

- Member of the Organizing Committee for ICE2001 5th International Conference “Internal Combustion Engines: Experiments and Modeling” Capri 19-21/9/2001
- Member of the Organizing Committee for ICE2003 6th International Conference on Engines for Automobile Capri 14-19 /9/ 2003
- Member of the Organizing Committee and Chair of Technical Session at ICE2005 7th International Conference on Engines for Automobile Capri 11-16 /9/ 2005
- Member of the Organizing Committee and Chair of Technical Session at ICE2007 8th International Conference on Engines for Automobile Capri 16-20 /9/ 2007
- Chair of Technical Session at 19th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems – ECOS 2006, Crete (Greece) 2006
- Member of the Organizing Committee and Chair of Technical Session at 6th Symposium Towards Clean Diesel Engines, June 20-22, 2007 - Ischia (Naples) – Italy
- Invited Speaker and Chair of Technical Session at International Congress of Combustion Engines – PTNSS Kongres 2007, Cracow (Poland) June 2007.
- Chair of Technical Session at 21st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems – ECOS 2008, Cracow (Poland) June 2007.
- Member of the Organizing Committee and Chair of Technical Session at ICE2009 9th International Conference on Engines and Vehicles Capri 13-18 /9/ 2009.
- Member of the Organizing Committee and Chair of Technical Session at Powertrain, Fuels and Lubricants SAE Conference, Rio de Janeiro (Brasil) 5-7/5/2010.
- Member of the Organizing Committee and Chair of Technical Session at Powertrain, Fuels and Lubricants SAE Conference, San Diego (USA) 25-28/10/2010.
- Invited Speaker, Member of the Scientific Committee and Chair of Technical Session of KONES Conferences since 2007.
- Member of the Scientific Committee of “The Spark Ignition Engine of the future” SIA - International Conference, Strasbourg (FR) November 30 -December 1 - 2011
- Member of the Organizing Committee and Chair of Technical Session at Powertrain, Fuels and Lubricants SAE Conference, September 18-20, 2012, Malmo, Sweden.
- Member of the Organizing Committee and Chair of Technical Session SAE/KSAE 2013 Powertrain, Fuels and Lubricants Conference, 21 - 23 October 2013. Seoul, Korea.
- Member of the Scientific Committee of “The Spark Ignition Engine of the future” SIA - International Conference Strasbourg (FR), December 3-5 - 2013
- Member of the Organizing Committee and Chair of Technical Session SAE 2014 Powertrain, Fuels and Lubricants Conference, 21 - 23 October 2014. Birmingham UK.
- Member of the Organizing Committee and Chair of Technical Session SAE/JSAE 2014 SETC Small Engine Conference, 21 - 23 November 2014. Pisa, Italy.
- Member of the Program Committee of International Conference on Advanced Energy (AE 2014), Chennai (India), 24-28 december 2014.
- Member of the Scientific Committee of “XXII International Symposium on Combustion Processes” Polish Jurassic Highland, 23-26 September 2015.
- Chair of Technical Sessions on “Spark Ignition Combustion” SAE WORLD CONGRESS 2016, 16-20 April, Detroit, MI-US.
- Member of the Scientific Committee of “MECHATECH '16” International Mechanical Engineering and Technologies Conference, May 17-18, 2016 Istanbul, Turkey.
- Chair of Technical Sessions on “SI Combustion” and “Flow and Combustion Diagnostic” SAE 2016 International Powertrain, Fuels & Lubricants Meeting, October 24-26, 2016 Baltimore, Maryland, USA.
- Chair of Technical Sessions on “Advanced Combustion” e “Alternative Fuels” 22th Small Engine Technology Conference (SETC2016), November 15-17, 2016 Charleston, South Carolina, USA
- Member of the Scientific Committee of IMSEC2016 “1st International Mediterranean Science and Engineering Congress” Adana, Turkey, October 26-28, 2016
- Member of the Organizing Committee and Chair of Technical Session 1st International Conference on Mechanical Engineering (ICME'16) Rome, Italy on 23-25 November, 2016.
- Chair of Technical Sessions on “Spark Ignition Combustion” SAE WORLD CONGRESS 2017, April 4-6, 2017, Detroit, MI-US.

- Chair of Technical Sessions on “SI Combustion” and “Flow and Combustion Diagnostic” SAE 2017 International Powertrain, Fuels & Lubricants Meeting, October 16-19, 2017, Beijing, China
- Chair of Technical Sessions on “Advanced Combustion” ,“Alternative Fuels” and “Measurements and simulations” 23th Small Engine Technology Conference (SETC2017) November 15-17, 2017, Jakarta, Indonesia.
- Chair of Technical Sessions on “SI Combustion” at ICE 2017 _ 13th International Conference on Engines & Vehicles_ September 14-17, 2017, Capri, Italy
- Technical Chair of Small Engine Technology Conference 2017-2018 organized by SAE/JSAE International.
- Chair of Technical Sessions on “Diagnostic Development”, “SI Combustion”, “Combustion in Gaseous Fueled Engines”, “Alternative and Advanced Fuels” & “Small Engine Technology” SAE 2019Int. Powertrain, Fuels & Lubricants Meeting, January 16-19, 2019 San Antonio, TX, USA.
- Chair of Technical Sessions on “Spark Ignition Combustion”, “Small Engine” & “Alternative and advanced fuels” at SAE WORLD CONGRESS 2018, April, 2018, Detroit, MI-US.
- Chair of Technical Sessions on “Advanced SI Combustion” SAE 2019 International Powertrain, Fuels & Lubricants Meeting, August 26-29, 2019, Kyoto, Japan
- Chair of Technical Sessions on “Fuel supply systems” 24th Small Engine Technology Conference (SETC2019) November 18-21, 2019, Hiroshima, Japan.
- Chair of Technical Sessions on “SI Combustion” at ICE 2019 _ 14th International Conference on Engines & Vehicles_ September 15-19, 2019, Capri, Italy
- Chair of Technical Sessions on “Small Engine Technology” & “Alternative and advanced fuels” at SAE WORLD CONGRESS 2020, April, 2020, Detroit, MI-US.
- Chair of Technical Sessions on “Engine Flows and Combustion Diagnostics” & “Powertrain Thermal management” SAE 2020 International Powertrain, Fuels & Lubricants Meeting, September 22-24, 2020 Krakow, Poland
 - Member of Technical Program Committees of WCRNRE-2020_ World Congress on Renewable and Non-Renewable Energy May 14-15,2020, Rome, Italy.
 - Member of Technical Program Committees of ICEPECA2020 _ 2nd International Conference on Energy, Power, Environment and Computer Application (ICEPECA2020) Xiamen, China November 15-16, 2020.

Patents

Method and device for detecting peak values of pressure in a cylinder of an internal combustion engine

Publication number US8429955 B2
 Publication type Grant
 Application number US 12/648,120
 Publication date 30 Apr 2013
 Priority date 29 Dec 2008
 Also published as EP2202504A1, EP2202504B1, US20100162803
 Inventors Ferdinando Tagliatalata Scafati, Nicola Cesario, Domenico Porto, Bianca Maria Vaglieco, Simona Silvia Merola
 Original Assignee Stmicroelectronics S.R.L.

Method and system for control of an internal combustion engine based on engine crank angle

Publication number US8984933 B2
 Publication type Grant
 Application number US 13/804,133
 Publication date 24 Mar 2015
 Filing date 14 Mar 2013
 Priority date 29 Dec 2008
 Also published as US20130211694
 Inventors Ferdinando Tagliatalata Scafati, Nicola Cesario, Domenico Porto, Bianca Maria Vaglieco, Simona Silvia Merola
 Original Assignee Stmicroelectronics S.R.L.

Verfahren und Anordnung zur Detektion von Druckspitzen im Zylinder einer Verbrennungsmaschine

Publication number EP2202504 B1
 Publication type Grant
 Application number EP20090180790

Publication date 21 Aug 2013
Filing date 28 Dec 2009
Priority date 29 Dec 2008
Also published as EP2202504A1, US8429955, US20100162803
Inventors Scafati Ferdinando Tagliatela, Nicola Cesario, Domenico Porto, Bianca Maria Vaglieco, Simona Silvia
Merola
Applicant STMicroelectronics Srl