

## **Prof. Dino Musmarra, PhD – Short CV**

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### Education

1989 - PhD in Chemical Engineering, University of Naples Federico II, Naples, Italy.

1984 - Degree in Chemical Engineering (110/110 cum laude), University of Naples Federico II, Naples, Italy.

### Present Academic Position

2018 - to present - Full Professor (Ing-Ind25) at the Department of Engineering of the School of Polytechnic and Basic Sciences of Università degli Studi della Campania "L. Vanvitelli".

### Previous Research Position

2001-2018 - Associate Professor (Ing-Ind25) at the Department of Engineering of the School of Polytechnic and Basic Sciences of Università degli Studi della Campania "L. Vanvitelli".

1999-2001 - Senior Researcher of the Institute for Research on Combustion - C.N.R., Naples, Italy.

1997-2001 - Member of the scientific Committee of the Institute for Research on Combustion C.N.R. Naples, Italy.

1986-1999 - Researcher of the Institute for Research on Combustion - C.N.R., Naples, Italy.

### Teaching activities

- Technologies for the pollution control (9 CFU, SSD: ING-IND25)"

- Waste management and treatment (9 CFU, SSD: INGIND25)",

- Gaseous emission treatment technologies (9 CFU, SSD: ING-IND25)"

## Research Interests

Main areas of teaching and research interest are Environmental Chemical Engineering, Pollution reduction technology, Flue gas treatment plants and Solid waste treatment plants. Research interests include: flue gas desulphurization from thermal power plants; micro-pollutant removal from waste incinerator exhaust gas; heat transfer in fluidized bed reactors; industrial waste water treatment; water body quality analysis; protection of ground-waters by means of permeable adsorbing barriers; hydrogen production from renewable sources; waste water treatment by using Advanced Oxidation Processes. Recently, he started new research activities for the investigation of hydrogen production at low temperature, the assessment of memory alloy properties, microalgal growth and valorisation for the production of valuable b-products. During his 30-years research career, he has served as principal investigator in 8 projects and project coordinator in 12 projects, funded with more than €3M for the development of contaminated groundwater remediation technologies and flue gas depuration technologies. He has published more than 135 papers in international journals and more than 100 papers in international conferences. His papers have been cited more than 2500 times in journal publications (h-index=33). He is reviewer in more than 15 international journals and more than 10 international conferences.

## Responsibility in Funded Scientific Research Projects

2018-2020 – (Principal Investigator) Fondo Crescita Sostenibile – Grandi Progetti R&S - PON Imprese e competitività FESR 2014/2020" Agenda digitale e Industria sostenibile. Title “Key Enabling Technologies for organic waSTE and Microalgae valorization”. Total amount of the project: 4.727.187,50 Euro. Duration: 36 mesi.

2017-2020 - (Scientific Coordinator of UNICAMPANIA Operational Unit) Project H2020-BBI-JTI-2016. Title “Valuable Products from Algae Using New Magnetic Cultivation and Extraction Techniques (VALUEMAG)”, Project ID: 745695. Total amount of the project: 4.789.000,00 Euro. Project amount for SUN Unit: 502.500,00 Euro. Duration: 36 months.

2015-2018 - (Scientific Coordinator of SUN Operational Unit) Project H2020-FETOPEN-2014-2015-RIA. Title: “Hybrid Electric Energy Integrated Cluster Concerning Renewable Fuels (HELENIC-REF)”, Project ID: 665318. Total amount of the project: 2.578.386,00 Euro. Project amount for SUN Unit: 553,500 Euro. Duration: 36 months.

2015-2018 - (Scientific Coordinator of SUN Operational Unit) Project H2020-FETOPEN-2014-2015-RIA. Title: “An Innovative Method for Improving the Structural Integrity using SMA Revolutionary Technology (InnoSMART)”, Project ID: 664892. Total amount of the project: 1.995.113,00 Euro. Project amount for SUN Unit: 466,000 Euro. Duration: 36 months.

2012-2014 - Project PON Research and Competitiveness 2007-2013. Title: "Mobile device for Desorption Hydrocarbons (DI.MO.D.I.)", project code: PON01\_00599. Total amount of the project: 4.071.907,17 Euro. Project amount for SUN Unit: 1,254,063.00 Euro. Duration: 36 months.

2010 - University Research Project: "Innovative technologies for the treatment of groundwater contaminated by chlorinated organic solvents". Duration: 12 months.

2009 - University Research Project: "Treatment Technologies for groundwater contaminated by chlorinated organic solvents". Duration: 12 months.

2008 - University Research Project: "Remediation of an aquifer contaminated by arsenic via PUMP AND TREAT technology". Duration: 12 months.

2007 - University Research Project: "Removal of heavy metals from aquifers." Duration: 12 months.

2007 - Regional Law no. 5/2002 - Promotion of scientific research in Campania, Annuity: 2007. Title: "Design of permeable adsorptive barriers for protection of aquifers." Duration: 12 months.

1999-2000 - ERDF Operational Programme of the European Community. POR subproject 5, measuring 5.4, 5.4.2 Action, Annuity 1999. Title "Innovative technologies for the treatment of gas from incineration of municipal and industrial waste". Duration: 24 months.

1996-1998 - Mediterranean Project: Research and training for third countries, CNR - ATM for Scientific and Technological Cooperation with the Mediterranean countries. Annuity 1996. Title: "Treatment of fumes from combustion processes" Period: 36 months.

1996-2001 - Principal investigator of research project "Purification of gas treatment", Institute for Research on Combustion, CNR, Naples.

1993-1995 - Scientific Director of research project "Desulphurization Dry and wet" Institute for Research on Combustion, CNR, Naples.

1987-1995 - Scientific Director of research project "Distribution of gas injected in fluidized beds". Institute for Research on Combustion, CNR, Naples.

1986-1989 - Scientific Director of SUN Operational Unit: "Diagnosis of the gas injected in fluidized beds" part of the subproject Coal and Hydrogen Energy Project Aimed 2 CNR-ENEA.

#### Participation in Research Projects

2007-2008 - Experimental analysis and modelling of the rheology of "slurry" - PRIN 2006-2007 (co-funded by the Ministry of Education). Duration: 24 months. Role: Participant in the project.

2005-2007 – "HYDRANET" (MEDOCC INTERREG IIIB) - European research project in 2005 - 2007. Duration: 24 months. Role: Steering Committee Member

2002-2003 – “Transport and dispersion of reactive pollutants in the phenomenon of interaction between the outflows of a natural watercourse and surface groundwater subalvea” (co-funded by the Ministry of Education). Duration: 24 months. Role: Participant in the project.

2000-2002 – “Study of the removal process for adsorption of mercury vapour present in gaseous emissions of waste incinerators”. National Environment Protection Agency (ANPA) and Department of Chemical Engineering, University of Naples "Federico II ". Role: Participant in the project.

1999-2000 – “Innovative technologies for treatment of gaseous emissions from incineration of municipal and industrial waste” sub-POP 5 measuring 5.4 Action 5.4.2 Annuity 1999; ERDF Operational Programme of the European Community. Role: Participant in the project.

1993-1994 – “Felling dry of mercuric chloride vapours contained in the fumes of incinerators of municipal solid waste” Scientific Project Venetian Lagoon System, Conv. Murst-University of Venice, subroutines. 3, Research line 3.4.

1986-1989 – “Significant stages of wet flue gas desulfurization processes” part of the project of Coal and Hydrogen Energy 2 CNR-ENEA.

1983-1984 – “Gasification in fluidized bed with low calorific value for gas-steam combined cycle” part of the project of Coal and Hydrogen Energy 2 CNR-ENEA.

#### Scientific Committees and Editorials

2018 - to present: Editorial-scientific board member of the journal “Sustainability” (MDPI) ISSN: 2071-1050.

2018 - to present: Editorial-scientific board member of the journal “International Journal of Environmental Research and Public Health” (MDPI) ISSN: 1660-4601.

2018 - to present: Editorial-scientific board member of the journal “Energies” (MDPI) ISSN: 1996-1073.

2017 - to present: Member of the Committee of the Advanced Energy Materials Congress 25 - 28 March 2018, Stockholm, Sweden

2017 - to present: Member of the National Inter-University Consortium for Marine Sciences (Consorzio Nazionale Interuniversitario per le Scienze del Mare – CoNISMa)

2017 – to present: International Technical Committee member of the 4th International Conference on Environmental Systems Research (ICESR 2017), Singapore 14-16 December, 2017.

2017 – to present: Editorial-scientific board member of the journal "Environments" (MDPI) ISSN: 2076-3298.

2017: Guest editor in the special issue of Environmental Science and Pollution Research Journal from SIXTH CEMEPE & SECOTOX Conference.

2017: International Scientific Committee Member as Reviewer of the 2nd International Conference on NANOTECHNOLOGY BASED INNOVATIVE APPLICATIONS FOR THE ENVIRONMENT, 24- 27 September 2017, Rome, Italy.

2016: Guest editor in the special issue of Desalination and Water Treatment Journal from PRE13 Conference.

2015 to present: Editorial-scientific board member of the journal "Science and Research" Section: *Science And Research - Environment* ISSN: 2283-5873.

2012-2016 - Editorial board member of the scientific world journal - Subject Areas: Chemical Engineering ISSN: 1537-744X (Online).

2000-2002 - Member of the organizing committee of the 15th International Symposium on Industrial Crystallization September 15 to 18, 2002.

1997-2001 - Member of the scientific Committee of the Institute for Research on Combustion CNR Naples.

#### Organizational Activities

2017 - Organizer of the Special Session entitled “Protection and management of the environmental matrices: advanced solutions” as part of “Sixth International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE) and to the SECOTOX Conference”, Thessaloniki, Greece, from June 25 to 30, 2017.

2016 - Organizer of the Special Session entitled “Innovative technologies for polluted water remediation” as part of “13th International Conference on Protection and Restoration of the Environment”, Mykonos island, Greece, 3rd to 8th of July, 2016.

2015 - Coordinator of the Scientific Committee /Organizer of the final workshop for the project P.O.N. “DI.MO.D.I.” entitled “Cleaning And Remediation Of Contaminated Sites. Experiences, interventions and technologies in comparison”.

2014 to present - Director of the High School in “Safety at Work”, Università degli Studi della Campania "L. Vanvitelli".

2013 to present - Member of the Board for PhD in “Environment, Design and Innovation”, Doctoral School of Engineering Disciplines of the Università degli Studi della Campania "L. Vanvitelli".

2011-2013 - Director of the Master in Safety Engineering, of the Università degli Studi della Campania "L. Vanvitelli".

2009-2012 - Member of Board of the PhD in “Occupational Medicine, Science and Technology for the Environment” (doctorate “Risk analysis, industrial safety and prevention in work environment”), Doctoral School of Science for Life and Environment of the Università degli Studi della Campania "L. Vanvitelli".

#### Review Activities

2016 – to present Referee for ERA-NET Cofund WaterWorks 2014 Research Project “Biorg4WasteWaterVal+”

2012 - Referee for Research Grants Committee of Hong Kong research project “Reliability analysis and centrifuge modeling of long term performance of composite liners in sanitary landfill for municipal solid waste”, within the Competitive Earmarked Research Grant 2012/2013.

2011 - Referee for Research Grants Committee of Hong Kong of the research project “An innovative holistic environmental technology: an all-in-one, low carbon solution for flue gas, and sewage sludge”, as part of the Competitive Earmarked Research Grant 2011/2012.

2008 - Referee for Research Grants Council of Hong Kong of “Bioremediation of contaminated marine sediment research project by denitrification”, within the Competitive Earmarked Research Grant 2008/2009.

2002- to present - Referee for the Ministry of Education on Research Program of Relevant National Interest (PRIN).

1991 to present - Referee for International Scientific Journals and/or international Conferences such as: Powder Technology, Industrial and Engineering Chemistry Research, Water Research, Journal of Hazardous Materials, Chemical Engineering Science, Chemosphere, Fluidization XI, Fuel, Chemical Engineering Journal, etc.

#### Technological Transfer

2014 - to present: co-founder of the Academic Spin-Off “Environmental Technologies s.r.l.” of the Università degli Studi della Campania “L. Vanvitelli” (ex Second University of Naples).

Awards won by the Academic Spin-Off “Environmental Technologies s.r.l.”

2015: Start Cup Campania 2014 Award, supported by the Universities of Campania Region (Fund: 2.000,00 €).

2014: Young Entrepreneur Initiative (YEI) Award Franci@Innovazione 2014, supported by the French Embassy in Italy.

#### Awards

2018: Elsevier Journal of Energy Chemistry *2016 Best Paper Award* – Biomass gasification technology: The state of the art overview, Molino, A., Chianese, S., Musmarra, D. 2016, Journal of Energy Chemistry, 25(11), 10-25.

2018: Web Of Science Highly Cited Paper - *Top 1% of the academic field of Chemistry* – Biomass gasification technology: The state of the art overview, Molino, A., Chianese, S., Musmarra, D. 2016, Journal of Energy Chemistry, 25(11), 10-25.