CURRICULUM VITAE

SURNAME & NAME	**Fino Debora**

Academic Position

Qualification/Title	**Full Professor**
University	**Politecnico di Torino**
Department	**Applied Science & Technology**
Academic Field	**SC 09/D3 - Chemical plants & technologies**
Academic Discipline	**SSD ING-IND/25 - Chemical Plants**

Working experience

Dates	**From 3/03/2016 to today**
Name and address of the Employer	**Politecnico di Torino** **Corso Duca degli Abruzzi, 24 - 10129 Torino - Italy**
Position held	**Full Professor** **SSD: ING-IND/25 Chemical Plants** **Department: Applied Science & Technology**
Main activities/responsibilities	**Teaching activity:** • **Professor of "Chemical and Food-industry Plants"–** • **Bachelor's degree on Chemical & Food Engineering.** • **Professor of "Re-use and Energetic Valorization** • **Processes" – optional course selected by all** • **Bachelor's engineering students.** **Scientific activities:** • **CO2 -to-chemical, Biochemical conversion of CO2 to** • **CH4, Biochemical conversion of syngas to PHA** • **Hydrogen production from Biogas reforming** • **Processes, reactors and plants for the catalytic** • **treatment of diesel and methane emissions.** • **Catalytic filters for the treatment of smoke.** • **Processes and reactors for the advanced oxidation of** • **pollutants.** • **Pre-treatment of combustible fossils and advanced** • **processes for the synthesis of bio-derived fuels.** • **Analyses relative to waste treatment platforms and life-cycle assessment.** **Scientific Responsibilities:** **Several industry-funded research projects (Rossi,**

	Cornaglia, General Motors, *etc.*) and international/national peer reviewed ones (PAR-FSC NO More Waste, ASP-NGRWaste, ...). **<u>Coordination Responsibilities:</u>** • **H2020 - EU project BIOROBURplus (FCH-JU)** • **H2020 – EU project CELBICON (ISIB)**

Dates	**From 01/1/2011 to 2/03/2016**
Name and address of the Employer	**Politecnico di Torino** **Corso Duca degli Abruzzi, 24 - 10129 Torino - Italy**
Position held	**<u>Associate Professor</u>** **SSD: ING-IND/25 Chemical Plants** **Department: Applied Science & Technology.**
Main activities/responsibilities	**<u>Teaching activity</u>:** • **Professor of "Chemical and Food-industry Plants" – Bachelor's degree on Chemical & Food Engineering.** • **Professor of "Re-use and Energetic Valorization Processes" – optional course selected by all Bachelor's engineering students.** • **Professor of Processes and Technology of the Food Industry for Chemical and Food Engineering – Master of Science's degree in Chemical & Sustainable Process Engineering.** **<u>Scientific activities</u>:** • **Hydrogen production from Biogas reforming** • **Processes, reactors and plants for the catalytic treatment of diesel and methane emissions.** • **Catalytic filters for the treatment of smoke.** • **Processes and reactors for the advanced oxidation of pollutants.** • **Pre-treatment of combustible fossils and advanced processes for the synthesis of bio-derived fuels.** • **Analyses relative to waste treatment platforms and life-cycle assessment.** **<u>Scientific Responsibilities:</u>** **Several industry-funded research projects (General Motors, Waste Italia, Austep, Lavazza, Ferrero, Asja Ambiente Italia, *etc.*) and international/national peer reviewed ones (PAR-FSC Smartoil, POR-FESR iDea, Alta Scuola Politecnica).** **<u>Coordination Responsibilities:</u>** • **EU project BIOROBUR (FCH-JU)** • **Regional project POR-FESR ECOFOOD (Coordination of Polito Units)**

Dates	**From 01/01/2005 to 02/01/2011**
Name and address of the Employer	**Politecnico di Torino** **Corso Duca degli Abruzzi 24 - 10129 Torino - Italy**
Position held	**<u>Assistant Professor</u>** **SSD: ING-IND/25 Chemical Plants** **Department: Materials Science & Chemical Engineering.** **Faculty: Engineering I.**

Main activities/responsibilities	**Teaching activity:** • **Professor of "Treatment Plants for Waste Effluents" for the students of the Master of Science's degrees of Chemical, Mechanical and Civil Engineering.** • **Professor of "Recycle and Re-use in the Process Industry" for the Chemical Engineering Master of Science's degree.** **Scientific activities:** • **Processes, reactors and plants for the catalytic treatment of diesel and methane emissions;** • **Pre-treatment of combustible fossils and advanced processes for the synthesis of bio-derived fuels.** • **Catalytic filters for the treatment of flue gases.** • **Processes and reactors for the advanced oxidation of pollutants (e.g. reactors for the electro-and photo-oxidation of bio-refractory organic pollutants, such as phenol, antibiotics and other medications, colorants, urea, organic fly- composites etc. ; reclamation of polluted land; self-cleaning surfaces, etc.).** **Scientific Responsibilities:** **Several industrial research projects (GM, Pirelli, Cornaglia, Sud-Chemie, Palazzetti, ENI, SMAT, *etc.*) and international/national peer reviewed ones (MSE-ENEA, BIODIET, RSA 2004, PRIN 2007, FP6-2004-ENERGY-3: Flame SOFC, FP6-2005 -TRANSPORT-4: TOP-EXPERT, FP7-NMP-2008-LARGE-2: ADDNano).** **Coordination Responsibilities:** • **Regional project CIPE 2006 - BIOH$_2$POWER**

Dates	**From 2/12/2002 to 31/12/2004**
Name and address of the Employer	**Politecnico di Torino** **Corso Duca degli Abruzzi 24 - 10129 Torino - Italy**
Position held	**Fixed-Term Assistant Professor** **SSD: ING-IND/25 Chemical Plants** **Department: Materials Science & Chemical Engineering.** **Faculty: Engineering I.**
Main activities/responsibilities	**Teaching activity:** • **Professor of "Treatment Plants for Waste Effluents" for the Master of Science's degrees of Chemical and Mechanical Engineering.** • **Professor of "Physics Unit Operations" for the Bachelor's degree in Textile Engineering.** **Scientific activities:** **Processes, reactors and plants for the catalytic treatment of diesel emissions (*e.g.* filtration and combustion of particulates, reduction and absorption of NO_x, development of catalytic traps).**

Dates	**From 1/01/2000 to 7/03/2003**
Name and address of the Employer	**Politecnico di Torino** **Corso Duca degli Abruzzi 24 - 10129 Torino - Italy**
Position held	**PhD student**

	in Chemical Engineering (SSD ING-IND/23-27) at the Department of Materials Science and Chemical Engineering; Faculty of Engineering.
Main activities/responsibilities	**<u>Teaching activity</u>:** **Cycles of lessons and practices in "Chemical Plants II" and in "Treatment Plants for Polluting Effluents" for the Master of Science's Degree in Chemical Engineering.** **<u>Scientific activities</u>:** **Diesel particulate abatement with special attention on catalytic technologies for soot trapping & combustion, from the development of several catalytic materials to the assessment of their catalytic properties, from the elucidation of the reaction mechanism they promote to the assessment the related kinetic laws, from catalyst deposition in trap monoliths to the testing of these products in a diesel-engine bench plant.**

Education and Training

Date	**2003**
Institution which issued the degree	**Politecnico di Torino, Torino, Italy**
Type of Degree awarded (only Bachelor's Degree, Master of Science's Degree, PhD)	**PhD in Chemical Engineering**

Date	**1999**
Institution which issued the degree	**Politecnico di Torino, Torino, Italy**
Type of Degree awarded (only Bachelor's Degree, Master of Science's Degree, PhD)	**Master of Science's Degree in Chemical Engineering**

Publications

1.3.1 Overall Scientific Production Indicators

The overall scientific production of articles by Debora Fino accounts for more than 200 articles on international journals, 6 book chapters, 2 patents, 1 PhD Thesis and more than 250 congress publications, whose topics concern these research areas:

DPR Diesel particulate removal by filtration/combustion
NRD NO_x reduction/decomposition/storage)
AOP Advanced oxidation processes
BFP Bio-Fuel Processing
MFR Multifunctional Reactors
EDW Eco-Design of waste treatment processes
CO2 CO_2-to-chemicals technologies
CCG Catalytic combustion of HC and CO
NSA Nanolubricants synthesis and application

The main bibliometric parameters were evaluated on 19th October (2017):

Google Scholar: h-index 38; received citations: 4570
Scopus database: h-index 35; received citations: 3583
Web of Science: h-index 32; received citations 3047

1.3.2 Brief description of the main research topics

As mentioned earlier, the research activities of Debora Fino can be divided into 9 main research topics. These topics are described briefly in the following.

1) DPR: Diesel particulate removal by filtration/combustion

This research topic encompasses the development of catalysts, processes, reactors and plants or systems for the catalytic treatment of diesel emissions (*e.g.* filtration and combustion of particulates from flue gases, development of catalytic traps).
Filters exhibit an intrinsic multi-scale complexity that is reflected by a trade-off between nano- and macro-scale phenomena. Consequently, the catalytic behaviour of a filter usually results in a non-linear combination of multi-scale phenomena.
To address these dynamic and complex systems a multiscale approach is mandatory, since the operating conditions vary over time and different functionalities (e.g. catalysis and filtration) are usually assembled on the same monolithic support, which is a demanding requirement in terms of space and cost. Debora Fino's impact on this research line concerned all the most important factors affecting the diesel particulate catalytic traps performance (*i.e.* the catalyst composition, the reaction mechanisms, the catalyst-soot contact and so on). Studies were carried out up to trap prototype scale tested under conditions representative of real life, in order to achieve the knowledge required for the development real prototype catalytic reactors to be tested in vehicles.

This topic can be further subdivided into 4 sections:

a) CATALYST DESIGN: Catalyst design, synthesis, characterization plays an important role in the automotive catalysis. In order to derive the reaction mechanisms of the materials synthetized, the catalytic properties of the surface must be determined to develop active, hydrothermally-stable and robust catalysts.

b) TRAP DEVLOPMENT AND MODELLING: The contact between soot and catalyst plays a key role in solid-solid reactions, since the catalytic activity depends on the interaction between the two solids

and the gas. Different deposition techniques (*i.e. in situ* combustion synthesis, washcoating, microwave-assisted precipitation) were adopted to deposit the best performing catalysts on several ceramic materials with different geometries, microscale-morphologies and sizes. Trap performance evaluation at lab scale at GHSV of interest is useful to validate advanced modelling on the particulate deposition and filtration inside the trap. This is also useful to define a regeneration procedure entailing the lowest possible fuel consumption, and to evaluate the local effect of the heat transfer phenomena over the progress of soot conversion during regeneration.

c) FULL SCALE TESTING: The performances of catalytic trap prototypes has been assessed using different pilot plants (acetylene burner, stationary internal combustion engine and dynamic engine bench, with different engine sizes, 1, 1.3, 2 and 6 liters of displacement, from passenger cars to light duty vehicles applications).

d) PRIMARY AND SECONDARY POLLUTANTS EMISSIONS: During fast catalytically-promoted regeneration of the commonly employed diesel particulate traps, secondary PM0.1 particulate emissions are emitted owing to oxidative fragmentation of the trapped particulate, favored by the heat released by combustion and the catalytic activity. This finding led to define different regeneration criteria/procedures for safe and proper handling of soot combustion in presence of very active catalysts to minimize the aforementioned problem.

The DPR one is with no doubt the field of research for which Debora Fino is mostly recognized in the international scientific community and where she has received the greatest number of awards and recognitions. She has always been able to combine the fundamental approach needed to govern the design of catalysts and catalytic reactors with an application-oriented attitude. This peculiar feature has also ensured D. Fino a high reputation within many industrial companies which commissioned research projects to the Politecnico di Torino under her supervision, (GENERAL MOTORS, Pirelli Eco Technology, SOGEFI filtration, Cornaglia Group and Hysytech). This cooperation with industries has also ended in the filing of one patent . Extensive funding was also obtained from open-calls:

i) on a regional basis (RSA2004 – *Catalytic Treatment of Diesel Engine Emissions; Beyond the Euro IV Innovative Regional Platform for the development of new products, processes and technology in the AUTOMOTIVE sector*; iDea platform: *Innovative Diesel engine applications*);
ii) on a national level (PRIN07 – *New Catalytic Approaches and Innovative Regeneration Techniques for the Control of the Emission of Nanoparticles from Diesel Engines*).

Last but not least, Debora Fino won two prestigious awards for young researchers for her activities in this area: the Italgas Prize (now ENI Award) and the SAPIO Prize.

2) NRD: NO_x reduction/decomposition

This research topic covers the development of catalysts, processes, reactors and plants for the catalytic reduction of NO_x with *e.g.* NH_3, H_2 or HC, the selective absorption of NO_x, the simultaneous removal of soot and NO_x from diesel engine exhausts (from passengers car to light-duty vehicles) and the catalytic decomposition of N_2O from the treatment of emissions from industrial plants.
Once again, the analysis concerned both the development of catalysts through a knowledge-based design, as well as their deposition over structured supports and related testing in realistic conditions.
These activities were funded by the European Community (TOP EXPERT – *Tailored on-Board Activated Agent Production for exhaust After-treatment Performance Enhancement project*) as well as via private industrial funds (GENERAL MOTORS, CORNAGLIA Group, LAVAZZA S.p.A). These research activities kindled the strong interest of the company CORNAGLIA Group which funded a significant research project (400.000 € at the beginning of 2017) under the responsibility of Debora Fino to work on the so called SCRoF, selective catalytic reduction of nitrogen oxides on filter.

3) CCG: Catalytic combustion of HC and CO

This line includes the catalytic combustion of methane, hydrocarbons and carbon monoxide in different application contexts (*e.g.* the development of catalytic converters for methane vehicles, the development of catalytic converters for wood boilers). This research activity represents a diversification in the research activities of Debora Fino in the field of structured catalytic reactors, and was mostly induced by industrial requirements in the above-mentioned fields. Most of the funding came from industrial projects (e.g. OMB Saleri SpA).

4) NSA: Nanolubricants synthesis and application

Advanced processes and reactors for the synthesis of nano-lubricating powders were developed as part of the European project ADDNANO (*The development and scale-up of innovative nanotechnology-based processes into the value chain of the lubricants market*). These research activities kindled the strong interest of the company PETRONAS which funded a significant research project (300.000 € at the beginning of 2015) under the responsibility of Debora Fino. The main research issues investigated in this research topic are: i) the modeling of the synthesis reactor for nano-lubricants based on MoS_2; ii) the synthesis of nanoparticles; iii) tests in engine cells; iv) the evaluation of the environmental and toxicological impact of gaseous effluents generated by internal combustion engines that utilize the nano-lubricants developed in the aforementioned project; v) the compatibility of nano-lubricants with the downstream catalytic converters; vi) the LCA analysis of these new products and the related manufacturing processes.

5) MFR: Multifunctional Reactors

This research area is particularly wide-ranging. Multi-functional catalytic filters, suitable for the simultaneous abatement of fly-ash (by means of cake filtration) and the gaseous pollutants present in the flue gases from solid urban waste incinerators were the first reactors developed, mainly under the spur of industrial bodies (e.g. Le Vallette AEM power plant in Turin). Beyond that, a bright idea came within the EU project FlameSOFC: apply a trap downstream a non-catalytic methane partial oxidation reactor leading to the decoupling of the residence time at high temperatures of the generated carbon particles and the syngas with the promotion of a self-cleaning mechanism by the thermodynamically-favored carbon gasification. This trap was one of the key process items within the EU projects BIOROBUR (*Biogas robust processing with combined catalytic reformer and trap*) and BIOROBURplus *(Advanced direct biogas fuel processor for robust and cost-effective decentralised - Hydrogen production)* coordinated by Debora Fino. Additional applications were found in the treatment of the flue gases of a wood fired boiler (company: Palazzetti) or the development of self-cleaning surfaces for ovens or refrigerators (company: Indesit).

6) BFP: Bio-Fuel Processing

This topic primarily concerned the pre-treatment and reforming of biogas and advanced processes for the synthesis of bio-derived fuels. In this field, five papers were published on the de-sulphurization of fuels (Biogas, combustible oils) through selective absorption for high-temperature fuel cell systems (SOFC and MCFC) within the research activities of the FlameSOFC and BioH_2Power projects.
Different papers on the synthesis of gaseous fuels and bio-oil were then published on the grounds of the research carried out in the projects BIODIET (*Liquid Derivatives from Ligno-cellulosic Biomasses as Additives of the Diesel Standard project)* and ECOFOOD (*Research & Innovation for the Improvement of the Sustainability of the Agricultural Food Chain,* with workpackage 5 devoted to conversion of agro-food waste processing under the responsibility prof. Debora Fino).

7) CO2: CO_2-to-chemicals technologies

Thanks to an H2020 EU project CELBICON (*Cost-effective CO2 conversion into chemicals via combination of Capture, ELectrochemical and Biochemical CONversion technologies*), this research field, which has been undertaken more recently (from 2015 on) aim at the development of new CO_2-to-chemicals technologies, conjugating at once small-scale for an effective decentralized market penetration, high efficiency/yield, low cost, robustness, moderate operating temperatures and low maintenance costs. These technologies will bridge cost-effective CO_2 capture and purification from the atmosphere through sorbents, with electrochemical conversion of CO2 (via PEM electrolysis concepts, promoting CO2 reduction at their cathode in combination with a fruitful oxidation carried out simultaneously at the anode), followed by bioreactors carrying out the fermentation of the CO2-reduction intermediates (syngas, C1 water-soluble molecules) to form valuable products (bioplastics like Poly-Hydroxy-Alkanoates - PHA -, isoprene, lactic acid, methane, etc.) as well as effective routes for their recovery from the process outlet streams.

8) AOP: Advanced oxidation processes

Debora Fino developed processes and reactors for the advanced oxidation of pollutants for several applications:

- electro- and photo-oxidation of bio-refractory organic pollutants dissolved in waters, such as phenol, antibiotics and other pharmaceuticals, colorants, organic fly- composites, *etc.*;
- water recycling though urea oxidation in shuttle orbiters;
- reclamation of polluted lands;
- self-cleaning surfaces for domestic appliances.

Several papers were published in journals on these topics, adding to an activity chain that was started in 2005, and which has been conducted with both public funding (*e.g.* PRIN and RSA projects) and industrial funding (*e.g.* Alenia and SMAT):

9) EDW: Eco-Design of waste treatment processes

In the present research topic, analyses on waste treatment platforms as well as on the life-cycle of some recyclable products were carried out. This research field has led to the publication of numerous papers, but also to the drawing up of significant research contracts with different industries, under the scientific responsibility of Debora Fino (*e.g.* ENI, Ferrero, Ago Renewables, Lavazza, Waste Italia, AUSTEP, *etc.*). Public-funding was also obtained through project such as the innovative agricultural platform project ECOFOOD (*Research and Innovation for Improvements in Sustainability of the Agricultural food chain*), which was coordinated by Ferrero, in which Debora Fino coordinated the various POLITO groups involved in her University, or the European project WASTECOSMART (*Optimization of Integrated Solid Waste Management Strategies for the Maximization of Resource Efficiency*), of which Debora Fino was in charge of the scientific aspects for POLITO.

1.3.3 Overall Scientific Production

The complete List of papers, conference presentations and abstracts can be found at the bottom of web page: http://porto.polito.it/view/creators/Fino=3ADebora=3A003061=3A.type.html

1. Coordination of research and technology transfer groups and projects

2.1. PhD, post-docs, grants researchers and assistant professors tutored

The candidate is a member of the research group CREST (Catalytic Reaction Engineering for Sustainable Technologies; http://www.disat.polito.it/research/research_groups/crest).
Particularly, she is directly responsible for the section on Waste Minimization and Environment Protection (http://www.disat.polito.it/research/research_groups/crest/waste_minimization_and_enviroment_protection).
In this context, the candidate was tutor or co-tutor of several PhD students, Post Docs, research assistants and academic staff members, here presented for each of her 8 main research topics (section 1.3.2.).

2.1.1. DPR: Diesel particulate removal by filtration/combustion

PhD Students

EMANUELE CAUDA, January 2002 - December 2004. XVII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: DIESEL PARTICULATE REMOVAL VIA CATALYTIC WALL-FLOW TRAPS.

PIETRO PALMISANO, January 2003 - December 2005. XVIII PhD Cycle on Materials Science and Technology at Politecnico di Torino.
Title: DEVELOPMENT OF CATALYST PRODUCED BY "COMBUSTION SYNTHESIS METHOD" TO REDUCE DIESEL ENGINE EMISSIONS.

DAVIDE MESCIA**,** January 2004 - December 2006. XIX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: CATALYTIC AFTERTREATMENT OF DIESEL EXHAUSTS.

JOSE' CARLOS CAROCA, January 2007 - December 2009. XXII PhD Cycle on Chemical Engineering at Politecnico di Torino
Title: EMISSIONS TREATMENT FROM COMMERCIAL VEHICLES.

SAMIR BENSAID, January 2007- December 2009. XXII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: MODELLING OF MULTIFUNCTIONAL FILTERS.

GIORGIO VILLATA, January 2008 - December 2010. XXIII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: EMISSIONS TREATMENT FROM HEAVY DUTY VEHICLES.

SERGIO MARCANO CASTILLO, January 2012 - December 2014. XXVII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: TECHNOLOGICAL APPROACHES TO IMPROVE THE ENGINE EFFICIENCY AND TO REDUCE POLLUTANT EMISSIONS OF AUTOMOTIVE DIESEL ENGINES.

PhD Students from other International Institutions

PIOTR LEGUTKO: from September 2013 to December 2013 from Jagiellonian University, Krakow.
Research theme: CATALYTIC SOOT COMBUSTION OVER POTASSIUM DOPED TRANSITION METAL OXIDES UNDER SEMI-REAL CONDITIONS.

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Simelys Pris Hernandez Ribullen	from 1st February 2005	to 31st December 2005
Eng. Josè Carlos Caroca	from 1st September2006	to 31st December 2006
Eng. Luca Ferraris	from 15th March 2009	to 28th May 2010
Eng. Juan Pablo Cicoria	from 1st October 2008	to 16th April 2013
Eng. Anita Incontro	from 1st July 2010	to 16th March 2012
Eng. Sergio Castillo	from 1st June 2011	to 31st December 2011
Eng. Paolo Miceli	from 15th February 2013	to 31st October 2014

Post Docs

Dr. Cauda Emanuele	from 1st January 2005	to 28th February 2006
Dr. Davide Mescia	from 1st January 2007	to 28th February 2008
Dr. Josè Carlos Caroca	from 1st January 2010	to 1st November 2010
Dr. Samir Bensaid	from 1st January 2010	to 16th July 2011
Dr. Sergio Marcano Castillo	from 1st January 2015	to 31st March 2015

Post Docs from other Institutions

Dr. Pullur Anil Kumar	from 1st April 2010	to 31st December 2011
Dr. Manju Dhakad Tanwar	from 15 March 2011	to 28th February 2012
Dr. Piotr Legukto	from 1st January 2015	to 31st May 2015

Assistant Professors

Dr. Samir Bensaid	from 17th July 2011	to 30th April 2015 (Associate Professor since the 29th May 2015)
Dr. Marco Piumetti	from 22nd July 2013	till now

2.1.2. NRD: NO_x reduction / decomposition

PhD Students

STEFANIA FURFORI, January 2006 - December 2008 XXI PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ADVANCED AFTER TREATMENT SYSTEMS FOR DIESEL EMISSIONS.

SILVIA ANDREOLI, January 2013 - December 2015 XXVIII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Tentative title: NO_x Reduction from Stationary Applications

ANDANA TAHRIZI January 2014 - December 2016 XXIX PhD Cycle on Chemical Engineering at Politecnico di Torino. (Sinchem Project)
Title: Multifunctional reactor for the simultaneous removal of NOx and Particulate

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Furfori Stefania	from 1st November 2004	to 31st December 2005
Eng. Silvia Andreoli	from 1st October 2012	to 31st December 2012
Eng. Andana Tahrizi	from 1st November 2013	to 31st December 2013
M.sc. Daniele Genta	from 1st July 2010	to 15th September 2011
Eng. Enrico Pautasso	from 1st August 2007	to 30th June 2008

Post Docs

Dr. Furfori Stefania	from 1st January 2009	to 31st December 2009

2.1.3. CCG: Catalytic combustion of HC and CO

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Laura Gotta	from 1st October 2005	to 31st July 2007
Eng. Federica Cane	from 1st May 2005	to 30th April 2007
Eng. Silvia Comba	from 16th April 2012	to 21st December 2012

2.1.4. NSA: Nanolubricants synthesis and application

PhD Students

PAOLO MICELI**,** November 2014 - October 2016 XXX PhD Cycle on Chemical Engineering at Politecnico di Torino.
This PhD work has just started on Nanolubricants synthesis and application on coated surfaces.

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Maria Vitale	from 16 November 2012	to 15th November 2013
Eng. Giovanna Santillo	from 15 November 2011	to 31st July 2012

Post Docs

Dr. Fabio Deorsola	from 1st January 2012	to 31st December 2012
Dr. Francesco Ganci	from 1st September2013	to 31st August 2014

Assistant Professors

Dr. Fabio Deorsola	from 1st January 2013	till now

2.1.5. MFR: Multifunctional Reactors

PhD Students

SARA BIAMINO, January 2002 - December 2004. XVII PhD Cycle on Materials Science and Technology at Politecnico di Torino.
Title: PREPARATION OF CERAMIC OXIDE MATERIALS BY SOLUTION COMBUSTION SYNTHESIS: (CATALYTIC DEVICES FOR POLLUTED EMISSION ABATEMENT AND ADVANCED MATERIALS).

ANDREA RAIMONDI, January 2007- December 2009. XXII PhD Cycle on Chemical Engineering at Politecnico di Torino
Title: CLEANING OF REFORMATE CASES FROM THERMAL PARTIAL OXIDATION REACTORS.

LUCA BARLETTA, January 2011 - December 2013. XXVI PhD Cycle on Materials Science and Technology at Politecnico di Torino.
Title: RANDOM ENZYMATIC INTERESTERIFICATION OF PALM OLEIN FOR FUTURE INDUSTRIAL APPLICATIONS

YEIDI SORANI MONTENEGRO CAMACHO, January 2014 - December 2016 XXIX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: BIOGAS REFORMING FOR PRODUCTION OF PURE HYDROGEN

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Sara Casadei	from 1st October 2005	to 31st December 2005
Eng. Andrea Raimondi	from 1st October 2005	to 31st December 2005
Eng. Yeidi Sorani Montenegro Camacho	from 1st February 2013	to 31st December 2013

Post Docs

Dr. Andrea Raimondi	from 1st January 2010	to 31st December 2010
Dr. Luca Barletta	from 16th January 2014	to 15th January 2015

2.1.6. BFP: Bio-Fuel Processing

PhD Students

HERNANDEZ RIBULLEN SIMELYS PRIS, January 2006 - December 2008. XXI PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: DESULFURIZATION PROCESSES FOR FC SYSTEMS.

FRANCESCO VILARDO, January 2008 - December 2010. XXIII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: PRE-TREATMENT OF LIGNO-CELLULOSIC BIOMASS FOR THE PRODUCTION OF SECOND-GENERATION BIOETHANOL.

DANILO CARVAJAL, January 2008 - December 2010. XXIII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: CLEANING AND CONVERSION OF BIOGAS IN FUEL CELLS SYSTEMS FOR ENERGY PRODUCTION.

ANDREA CRISTINA LUONGO MALAVE', January 2012 - December 2014. XXVII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: BIOHYDROGEN AND BIOMETHANE PRODUCTION FROM ORGANIC RESIDUES IN TWO-STAGE, BATCH AND CONTINUOUS, ANAEROBIC DIGESTION.

ANH VIET DUNG HOANG, January 2013 - December 2015. XXVIII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: SUPERCRITICAL BIO-DIESEL PRODUCTION.

Grant Researchers

Eng. Fabio Scarpa	from 1st January 2009	to 9th April 2010
Eng. Andrea Cristina Luongo Malave'	from 16th March 2011	to 31st December 2011

Post Docs

Dr. Danilo Carvajal	from 1st January 2011	to 31st May 2011
Dr. Andrea Cristina Luongo Malave'	from 1st January 2015	till now

2.1.7. CO2: CO_2-to-chemicals technologies

PhD Students

ANNALISA ABDEL AZIM, November 2014 - October 2017. XXX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Tentative title: Bio-Conversion of carbon dioxide into Methane

BEATRICE MONGILI, November 2016 – October 2019. XXXII PhD Cycle on Chemical Engineering at Politecnico di Torino.

Tentative title: Bio-Conversion of syngas into PHA

ENRICO CAMELIN, November 2016 – October 2019. XXXII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Tentative title: Bio-Conversion of lignin into valuable products

Assistant Professors

Dr. Tonia Tommasi	from 1st November 2016	till now

Post Docs

Dr. Simone Ansalaoni	from 1st January 2017	till now
Dr. Andrea Massa	from 1st January 2017	till now

2.1.7. AOP: Advanced oxidation processes

PhD Students

CARLOS CARLESI JARA, January 2004 - December 2006. XIX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ELECTROCHEMICAL REACTORS FOR DISSOLVED ORGANIC POLLUTANTS OXIDATION.

SIMONA DI GIULIO, January 2006 - December 2008. XXI PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ADVANCED OXIDATION PROCESSES FOR WATER AND GAS TREATMENT.

LUIGI RUTIGLIANO, January 2007 - December 2009. XXII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title. ELECTRO-CATALYTIC REMOVAL BY LIQUID/SOIL MATRIX.

CATALDO HERNANDEZ MACARENA, January 2009 - December 2011. XXIV PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ELECTROCATALYTIC TREATMENT OF WASTEWATERS.

ANDREA MASSA, January 2014 - December 2016 XXIX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ELECTROCHEMICAL REACTORS FOR PROCESS INTENSIFICATION

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

M.sc. Morena Sala	from 1st July 2004	to 31st July 2005
Eng. Benedetta Dogliotti	from 1st July 2010	to 16th April 2012
M.sc. Luca Barletta	from 15th October 2009	to 31st December 2010

Post Docs

Dr. Luigi Rutigliano	from 1st January 2010	to 15th June 2010
Dr. Macarena Cataldo	from 1st January 2012	to 30th November 2013
Dr. Simona Di Giulio	from 1st January 2009	to 30th April 2009
Dr. Marco Bernardi	from 1st October 2009	to 30th April 2011

2.1.8. EDW: Eco-Design of waste treatment processes

PhD Students

SARA SANFILIPPO, January 2010 - December 2012. XXV PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: ENERGY AND ENVIRONMENTAL TOOLS FOR PROCESS SUSTAINABILITY EVALUATION

FEDERICO BATTISTA, January 2012 - December 2014. XXVII PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: OPTIMIZATION OF THE ANAEROBIC DIGESTION FROM OLIVE OIL PRODUCTION'S WASTES

VIVIANA NEGRO, January 2014 - December 2016. XXIX PhD Cycle on Chemical Engineering at Politecnico di Torino.
Title: MASS AND ENERGY RECOVERY FROM FOOD WASTES

Grant Researchers (Assegnisti di Ricerca/ Contrattisti a Progetto)

Eng. Sara Sanfilippo	from 1st June 2009	to 31st December 2009
Eng. Elena Del Balzo	from 15th January 2010	to 3rd May 2010
M.sc. Emanuela Rocco	from 16th March 2012	to 15th March 2013
M.sc. Margherita Petriello	from 1st October 2013	to 31st January 2014

Post Docs

Dr. Sara Sanfilippo	from 1st May 2013	to 30th April 2015
Dr. Battista Federico	from 1st January 2015	to 29th February 2016

2.2. Success stories

The strong interest kindled by the research by Debora Fino in the industrial and academic world stands at the baseline of a number of successful carriers of the PhD students she tutored or co-tutored. The Table 6 below lists some examples.

Table 6. Successful carriers of Debora Fino PhD's students.

Name	Topic	Title Year	Current Position
EMANUELE CAUDA	DPR	2005	Senior Research Engineer @ The National Institute for Occupational Safety and Health (NIOSH, USA)
DAVIDE MESCIA	DPR	2007	R&D Project Engineer @ Asja Ambiente Italia
JOSE' CARLOS CAROCA	DPR	2010	Group Product Manager & Business Development @ AVL GmbH
SAMIR BENSAID	DPR	2010	Associate Professor @ Politecnico di Torino
GIORGIO VILLATA	DPR	2011	Project Manager @ Cornaglia Group
SERGIO MARCANO CASTILLO	DPR	2015	R&D Aftertreatment Engineer @ Fiat Group Automobiles
STEFANIA FURFORI	NRD	2009	Sustainability & LCA Specialist @ Luigi Lavazza S.p.A
SARA BIAMINO	DPR	2005	Associate Professor @ Politecnico di Torino
PIETRO PALMISANO	DPR	2006	Process Technology Engineer @ Biochemtex - Mossi Ghisolfi Group
ANDREA RAIMONDI	MFR	2010	Project Manager @ Segula Technologies
FRANCESCO VILARDO	BFP	2011	Project Engineer @ Hysytech

DANILO CARVAJAL	BFP	2011	Investigador Postdoctorando Ingeniería Química @ Pontificia Universidad Católica de Valparaíso
LUCA BARLETTA	MFR	2014	R & D Engineer at Desmet Ballestra
CARLOS CARLESI JARA	AOP	2007	Associate Professor @ Pontificia Catholic University of Valparaiso
LUIGI RUTIGLIANO	AOP	2010	Sales Manager @ Austep
CATALDO HERNANDEZ MACARENA	AOP	2013	Post-doctoral fellow @ The University of British Columbia (Canada).
FEDERICO BATTISTA	EDW	2015	R & D Engineer @ IFP Energies Nouvelles (France)

2.3. International collaborations

Debora Fino has had a profitable international scientific collaboration with:

- **Prof. Dimosthenis Trimis**, Head of the Chair for Combustion Technology at the Karlsruhe Institute of Technology, with whom she has written some papers in the MFR research line and collaborated within the European BioRobur and Biorburplus projects (Debora Fino is the coordinator of this project) as well as in the project Flame SOFC one.
- **Prof. Michiel Makkee**, associate professor at TU Delft University in the Chemical Engineering Faculty, with whom she has collaborated in the DPR field mentioned above, and coordinated the PhD studies of Sergio Castillo. The collaboration brought about of some papers in the DPR field. The early collaborations with Prof. Makkee started in the very first EU project in which Debora Fino took part (*i.e.* CATATRAP).

- **Prof. Carlos Carlesi Jara**, associate professor the Pontificia Catholic University of Valparaiso, School of Chemical Engineering, with whom she has collaborated on the topics of the AOP field and coordinated the PhD studies of Macarena Cataldo. This collaboration brought some papers of AOP line.

  Dr. Nitin Labhsetwar, researcher at the National Environmental Engineering Research Institute, Environmental Materials Division (NEERI), India, with whom she shared the postdoc responsibilities of Post Docs Engineers Manju Tanwar and Pullur Anil Kumar pertaining within the DPR field.

- **Prof. Konstandopoulos,** professor at the Thessaloniki University and Director of CERTH CPERI research center, with whom a long track cooperation was established within EU projects (e.g. DEXA cluster, ATLANTIS, *etc.*).

Additional cooperation were established, leading to exchange of PhD students, with other foreign academic professors such as Prof. Dan Luss (University of Houston); Prof. Andrzej Kotarba (Jagiellonian University, Krakow), Prof. Irina Angelidaki (DTU, Lingby).

Las but not least, Debora Fino holds strong cooperation with a number of research managers and multinational companies; just to mention a few:

- Andrew Holmes (Petronas, Australia)
- Ken Friis Hansen and Mike Potter (General Motors, USA)
- Jörg Spengler (InterKat, Germany)
- Christine Henry (Fera- Food and Environment Research Agency, UK)
- Marta Szigeti Bonifert (Regional Environmental Center, Hungary)
- Marvin Estenfelder Fredi P. KAlt (SUD-Chemie, Germany)
- Rolf Siefert (Udhe, Germany)

- Matthew Vincent (Octel, UK)
- Matti Harkonen (Kemira, Finland)
- Peter Prenninger (AVL, Austria)
- Takeshi Ninomiya and Kazunori YAMAYOSE (Ibiden, Japan)
- Claus- Dieter Vogt (NGK Europe, Germany)
- Willy Marrecau (Bekaeart, France)
- Andreas Mayer (Technik Termische Maschien, Switzerland)
- Galen Fisher (Delphi Research Labs, USA)
- Stephanie Schneider and Frederic Tronel (PSA Peugeot Citroen, France)

2.4 Scientific responsibility (Principal Investigator) of competitive National and International research projects, awarded through a peer-review process. (Source: Administration Offices of the Department of Applied Science and Technology, Politecnico di Torino)

Legend:

Project name, duration, budget and financial contribution in brackets (where not specified the financial contribution is equal to the total budget, *additional costs*) are indicated for each project.

2.4.1. Research projects under the scientific responsibility of Debora Fino

- PRIN 2007: New Catalytic Approaches and Innovative Regeneration Techniques for the Control of Nanoparticle Emissions from Diesel Engines – 24 months (22/09/2008 – 22/09/2010) – 60.789 € (43.000 €).
- FP6-2004 - ENERGY-3: FlameSOFC, Fuel Flexible, Air-regulated, Modular, Electrically Integrated SOFC System – 48 months +9 months of extension (01/10/2005 – 30/06/2010) – 473.696 €.
- FP6-2005 - TRANSPORT-4: TOP-EXPERT, Tailored on-Board Activated Agents Production for Exhaust Aftertreatment Performance Enhancement - 36 months (01/10/2006 – 30/09/2010) – 222.000 €.
- FP7-NMP-2008-LARGE-2: ADDNano, The development and scale-up of innovative nanotechnology-based processes into the value chain of the lubricants market - 48 months + 5 months of extension (01/10/2009 – 28/02/2014) – 862.603 € (648.879 €).
- Regione Piemonte Project CIPE 2006: BIOH$_2$POWER - From Waste to Renewable Gaseous Fuel for Current and Future Vehicles – 36 months (17/10/2007 – 16/10/2010) – 580.000 € (290.000 €).
- Regione Piemonte Project RSA 2004: Catalytic Treatment of Diesel Engine Emissions: Beyond Euro IV – 36 months (19/12/2005 – 18/12/2008) – 60.000 €.
- Regione Piemonte Project POR FESR 2007/2013 Measure I.1.1 "Innovative Agricultural Platform": ECO-FOOD: Research & Innovation for the Improvement of the Sustainability of the Agricultural Food Chain – 36 months + 6 months of extension (27/09/2010 – 31/03/2014) – 610.030 € (451.622 €).
- Ministry of the Environment and Protection of Land and Sea (GU 150, 23/12/09): BIODIET-Liquid Derivatives from Ligno-cellulosic Biomasses as Additives to Standard Diesel – 12 months (21/08/2011 – 21/08/2012) – 200.00 € (100.000 €).
- MSE-ENEA Electric System Research program agreement: Study on catalytic systems for the treatment of smoke from the combustion of lingo-cellulosic biomasses for small-medium sized cogeneration plants - 7 months (13/02/2012 – 30/09/2012) – 25.000 €.

- Regione Piemonte Project 2007/2013. Measure I.1.1. "Innovative Automotive Platform": iDea: Innovative Diesel engine applications – 27 months + 1 month of extension (11/03/2013 – 31/07/2015) – 340.000 € (253.385 €).
- FP7-FCH-JU-2012: BIOROBUR - Biogas robust processing with combined catalytic reformer and trap – 36 months (01/05/2013 – 30/04/2016) – 603.022€ (424.913 €).
- FP7-EU-REGIONS-2012-2013: Transnational cooperation between regional research-driven clusters: WASTECOSMART - Optimisation of Integrated Solid Waste Management Strategies for the Maximisation – 36 Months (01/09/2013 – 31/08/2016) – 56.580 € (51.000 €).
- ASP (Alta Scuola Politecnica): MICRA (Micro Combined generation for Residential Application) project – 18 months (01/01/2014 – 30/06/2015) – 6.500 €.
- PAR-FSC Regione Piemonte Project 2007/2013 Axis 1 – INNOVATION AND PRODUCTIVE TRANSITION, 1.1.3 – Measurement Innovation and P.M.I., Interventions and support of Innovation Poles: SMARTOIL: Pilot plant for the conversion of animal and vegetable fats into fuels for ICE- 12 months + 4 months of extension (31/07/2014 – 23/11/2015) - 152.300 € (91.380 €).
- Politecnico di Torino's incentives for the intensity of scientific publications (years 2011-2012) - 11.000 €.
- Politecnico di Torino's incentives for the young researchers selected based on the intensity of their scientific publications (years 2009-2010) - 6.000 €.
- ASP (Alta Scuola Politecnica): NRG Waste (a safe small scale thermal treatment for unsorted waste with recovery of energy) project – 15 months (1/07/2016 – 30/09/2017) – 2500,00 €.
- Programma Operativo Regionale "Competitività regionale e Occupazione" F.E.S.R. 2007/2013 in risposta al Bando: "Accesso alle agevolazioni per studi di fattibilità tecnica preliminari ad attività di ricerca industriale e sviluppo sperimentale riservate ai soggetti aggregati ai Poli di Innovazione" (Bando studi di fattibilità 2014) "NO MORE WASTE", 6 months (01/06/2015– 31/12/2015) – 25.300,00 € (12.650,00 €).
- H2020: CELBICON - Cost-effective CO2 conversion into chemicals via combination of Capture, ELectrochemical and Biochemical CONversion technologies – 42 months (01/03/2016 – 31/08/2019) – 432.524,75 € (432.524,75 €).
- H2020-FCH-JU: BIOROBURPLUS - Advanced direct biogas fuel processor for robust and cost-effective decentralised - Hydrogen production.– 42 months (01/01/2017 – 30/06/2020) – 301.900,00 € (301.900 €).

2.4.2. Projects coordinated by Debora Fino

- Regione Piemonte Project CIPE 2006: BIOH$_2$POWER - From Waste to Renewable Gaseous Fuel for Current and Future Vehicles – 36 months (17/10/2007 – 16/10/2010) – overall project funding 1.425.706 € (716.213€) managed as Coordinator (see above directly responsible 580.000 €, as listed in the section 2.4.1).
- FP7-FCH-JU-2012: BIOROBUR - Biogas robust processing with combined catalytic reformer and trap – 36 months (01/05/2013 – 30/04/2016) – overall project funding 3.843.868€ (2.486.181€) managed as Coordinator (directly responsible for 603.022 €, as listed in the section 2.4.1).
- Regione Piemonte Project POR FESR 2007/2013 Measure I.1.1 "Innovative Agricultural Platform" – ECO-FOOD: Research & Innovation for the Improvement of the Sustainability of the Agricultural Food Chain – 36 months + 6 months of extension (27/09/2010 – 31/03/2014) - 1.694.579 € managed as coordinator

of all POLITO Units in 3 different Departments (directly responsible for 610.030 €, as listed in the section 2.4.1).

- H2020: CELBICON - Cost-effective CO2 conversion into chemicals via combination of Capture, ELectrochemical and Biochemical CONversion technologies – 42 months (01/03/2016 – 31/08/2019) – managed as Coordinator of 6.210.927 €.
- H2020-FCH-JU: BIOROBURPLUS - Advanced direct biogas fuel processor for robust and cost-effective decentralised - Hydrogen production.– 42 months (01/01/2017 – 30/06/2020) – managed as Coordinator of 3.813.536 €.

2.5. Scientific responsibility of National and International research projects, ruled through partnership agreements with companies and/or public private bodies, which are leaders in their own sector

The main industrial research projects ruled through partnership agreements at POLITO in which Debora Fino has covered the role of Person in charge of scientific aspects (*Responsabilità Scientifica*) with companies having signed partnership agreements with the Politecnico di Torino are listed hereafter, together with the overall amount of funding received and the duration:

- GENERAL MOTORS: Diesel Exhaust Aftertreatment: soot loading investigation inside DPF single channel (31/10/2007 – 31/07/2008).
- GENERAL MOTORS: Experimental validation of an advanced aftertreatment simulation tool: investigation of soot quality and properties at multiple engine operating points (01/10/2006 -31/1/2007)
- GENERAL MOTORS: Soot-Cake Euro 5 SDE engine Characterization (01/11/2009 – 01/01/2010).
- GENERAL MOTORS: PN Characterization across the DOC on the Euro 5 SDE engine (01/04/2008 – 01/05/2008).
- GENERAL MOTORS: Competitors Aftertreatment System Characterization (01/07/2010 – 01/09/2010).
- GENERAL MOTORS: GT-power 1-D Kinetics modeling and experimental characterization of the LNT and SCRoF aftertreatment catalytic components (26/06/2014 – 31/03/2015).
- INDESIT: feasibility study on a self-cleaning lining for domestic appliances (01/6/2006 - 30/6/2006).
- PIRELLI: research, development and testing of PGM-free catalysts for the after-treatment and oxidation of carbon emissions from diesel engines (18/03/2009 – 18/03/2012).
- PIRELLI: tests in engine bench on 300 cpsi silicon carbide filter (01/12/2010 – 30/04/2011).
- PIRELLI: tests in engine bench cell on 4-segments filter for diesel particulate abatement (01/02/2011 – 31/07/2011).
- CORNAGLIA: study and research of after-treatment systems (fuel burners) for the carbon emissions reduction from heavy-duty and off-road diesel engines (06/05/2008 – 06/05/2009).
- CORNAGLIA: study and research of after-treatment catalytic systems for the carbon emissions reduction from commercial diesel engines (01/6/2006 – 31/5/2007).
- LAVAZZA: Life Cycle Assessment – evaluation of the environmental impacts of an EP coffee pod in polypropylene and in aluminum (19/02/2010 – 19/03/2010).
- ENI: detailed evaluation of the residual organic materials or even specifically generated materials in the Piedmont environment and comparative analysis of the most convenient technological approaches for their energetic valorization (09/09/2009 – 09/09/2010).
- FERRERO: Life Cycle Assessment of cold-chain products (24/05/2010 – 24/09/2010).
- Asja AMBIENTE: material and energy recovery through the anaerobic digestion of residual biomass (Regione Puglia) (29/01/2010 – 28/07/2010).
- Ago Renewables (Asja AMBIENTE): energy valorization of natural products and by-products of agricultural, food-industry, animal husbandry manure and organic waste origin through fermentation (01/01/2012 – 01/01/2015).
- SMAT: sensors for drinking and waste water networks (03/08/2010 – 02/08/2012).
- SMAT: innovative treatment technology for water-drinking plants (03/08/2010 – 02/08/2012).

- LAVAZZA: abatement of nitrogen oxides from coffee toasting effluents (01/11/2014 – 29/02/2016).
- CORNAGLIA: SCRoF (01/2/2017 – 31/01/2021).

Additional industrially funded research projects granted to Debora Fino are listed hereafter:

- ECOSERVICE: evaluation of the impact of laser printers on the quality of air in confined spaces in terms of nanoparticle emissions (01/6/2006-30/6/2006).
- SOGEFI FILTRATION: evaluation of the impact of the quality of air inhaled from internal combustion engines on the chemical-physical characteristics, but also on the quantity of particulates produced (15/1/2006 – 15/9/2006).
- PALAZZETTI: the development of a system for the oxidation of carbon monoxide, unburned hydrocarbons and the reduction in weight of particulates through the oxidation of the soluble organic fraction emitted from small-sized plants fed by biomass for the heating of civil buildings (29/11/2007 – 31/07/2008).
- SUD-CHEMIE: the development of catalysts for the production of nitric acid (01/05/2008 – 30/06/2009).
- SITI: energy valorization of biomasses and their relationship with the territory (08/11/2010 – 31/12/2011).
- TK: critical analysis of the Seebeck-effect promoting materials potentialities for their conversion into the thermal waste electric energy of vehicles with internal combustion engines (01/03/2012 – 30/06/2012).
- WASTE ITALIA: evaluation of research scenarios for the recovery of material and energy from non-hazardous waste (15/05/2012 – 31/12/2012).
- AUSTEP: energy evaluation experience through anaerobic digestion of Organic Fraction of Municipal Solid Waste (13/05/2013 – 03/06/2013).
- OMB SALIERI: Development of a catalytic converter to control the methane emission from CNG engines (01/06/2012 – 14/12/2012).
- HYSYTECH: PGM and Rare Earths Free Catalytic Converters for Diesel Exhaust Treatment (PREFER) (24/10/2014 – 01/12/2014).
- PETRONAS: Lubrication on Coated Surfaces (30/01/2015 – 30/01/2018).
- ROSSI: Anaerobic digestion of organic solid waste and valorization of digestate as nutrient for desert zone recovery (27/11/2016 – 27/11/2019).
- TREELIUM: Filter plasma assisted testing (14/04/2016 – 16/06/2016)

2.6. Participation of Debora Fino in projects managed under the scientific responsibility of others

Debora Fino took part in a number of EU research projects at the beginning of her career (from year 1999 till 2005), under the scientific responsibility of others, won under the IV, V, VI Framework Programs of the European Community:

- Brite-Euram CATATRAP (CATAlytic TRAPs for diesel particulate control),
- Growth project ART-DEXA (Advanced Regeneration Technologies for Diesel Exhaust particulate Aftertreatment).
- Growth project SYLOC-DEXA (System Level Optimisation and Control Tools for Diesel Exhaust particulate Aftertreatment).
- Growth project CAT-NAT (Cost-effective and durable nanostructured Pd CATalysts for NATural gas vehicle and premixed burner applications).
- Energy project BIOFEAT (Biodiesel Fuel Processor for a Fuel Cell Auxiliary Power Unit for a Vehicle).
- Energy & Transport IP project MC-WAP (Molten carbonate fuel cells for waterborne applications).
- Nanotechnology IP Project ATLANTIS (Aerosol Technologies and Hierarchical Assembly/Manufacturing for Advanced Nano-structured Porous Materials).

but also in the public-bodies-funded projects:

- TRM: “Turin incinerator: Analysis of the technical environmental characteristics of 3 possible sites for the location of the incineration plant with a connected waste pre-treatment plant in the South Eastern part of the Province of Turin”;
- PRIN02: “Abatement of bio-refractory pharmaceutical compounds in waste water through the electro-Fenton technology”;
- PRIN02: “Tridimensional innovative electrodes for the oxidation of bio-refractory organic pollutants”;
- PRIN03: “Development of perovskite catalysts and surface filtration catalytic traps for the abatement of diesel particulates”;
- Regione Piemonte Applied Research 2005: “Regeneration of condensate water during space missions”.

2.7. Outcomes obtained in the field of technology transfer, in terms of participation in start-ups and spin-offs, development, use and commercialization of patents/licenses.

In this context, Debora Fino filed two patents (source ESPACENET, http://worldwide.espacenet.com):

1.DPR Sin Xicola A., Ambrosini T., Fino D., Russo N., 2014-07-30, Post-treatment system of an exhaust gas, catalyst useful for said system and processes for their preparation, PIRELLI & C. ECO TECHNOLOGIES SpA, CN103958033 (A).

2.CCG Saleri P., Pirone R., Fino D., Russo N., 2015-02-05, Catalyst element and system, method of manufacturing of such element, OMB SALERI SpA, WO2015015337 (A1).

3. National and international reputation and professional activity for the scientific community

3.1 Participation in the Editorial Board of Journals with international reputation (in the role of Associate Editor or equivalent), participation in the Editorial Board of book series, encyclopedias and essays of recognized prestige.

Since August 2014, Debora Fino is Associate Editor of the *Journal of Advanced Catalysis Science and Technology*.

3.2 Official research and/or teaching and/or fellowship roles, positions as Scholar/ Visiting Professor in international highly qualified universities and research centres.

- Visiting professor at The Universidad Nacional de Cordoba (Argentine), Facultad de Ciencias Quimicas, Dept. De Fisico Quimica, Professor Osvaldo R. Camara, with the duty of teaching "Pollutant Emissions from Automotive Sources and Catalytic Systems for Exhaust Gas After-treatment" from November 2006 to January 2007.

- Visiting Professor at the University of Houston, Dept. of Chemical Engineering – Prof. Dan Luss, for a seminar on "Diesel Exhaust After-treatment" in April 2006.

- Carried out teaching activities on a regular basis as a visiting professor for CTI (Car Training Institute – Stuttgart, Germany) and for ANGQ (National Quality Guarantee Association – Rome, Italy) pertaining to company training courses from the environmental and energy perspective.

- Carried out teaching seminars for the R&D team of the Cornaglia Group on "Catalytic Systems for Exhaust Gas After-treatment of Light Duty and Heavy Duty Vehicles" in March 2006.

3.3 Offices in the Governing bodies of national and international scientific societies.

Debora Fino has been a member of several Boards for Projects selection (Evaluator) for the evaluation of projects at a national and international level for the European Community (NMP call FP7-NMP-2011-SMALL-5 and FP7-NMP-2013-LARGE-7, FP7 Marie Curie Action – funding of Regional, National and International Programs (COFUND), for the FONDECYT-CHILE Superior Councils Association, Technology of the Research Promotion Foundation's Framework Program 2009 – co-funded by the Republic of Cyprus and the European Regional Development,...) for the National Center of Science and Technology Evaluation of Kazakhstan.

In 2006, she was appointed as Scientific Advisor for the Politecnico di Torino in the "EUROSCIENCE OPEN FORUM – ESOF2010" project for which she coordinated European institutions in the Environmental Chemical Engineering sector.

Debora Fino has carried out refereeing activities for numerous international journals (e.g. Chemical Engineering Science, Chemical Engineering Journal, Industrial and Engineering Chemistry Research, Journal of Catalysis, Applied Catalysis B; Environmental, Catalysis Today, Catalysis Communications, Environmental Sci. & Technol., Fuel, Waste Management, Renewable Energy, Applied Catalysis A. General, Emission Control Science & Technology, *etc*.

3.4 Prizes and awards awarded to the candidate for his/her scientific activity and project activity in the Academic Fields ("Settori Concorsuali"), where this is appropriate.

- In November 2004, winner of the XVII edition of the "PREMIO ITALGAS –DEBUTTO NELLA RICERCA" – (ITALGAS Prize for the start in research activities; since 2008 the Prize turned into the current ENI Award, http://www.eni.com/eni-award/eng/bandi.shtml) awarded for her PhD thesis (Catalytic combustion of diesel particulates). A collection of the press-review on this award is available on the web page http://www.disat.polito.it/research/research_groups/crest/awards.

- In March 2004 she already won the "Young Researcher Travel Award" to attend the 18th International Symposium on Chemical Reaction Engineering" in Chicago to present 10.MFR and 11.DPR (K5 of "the twenty selected key publications", 1.2 section) papers.

- In February 2007, the paper *Innovative means for the catalytic regeneration of particulate traps for diesel exhaust cleaning* by Fino D., Fino P., Saracco G., Specchia V., published in Chemical Engineering Science., volume 58 (3-6) (2003) pages 951-958, was nominated, by Elsevier Science Publisher, as one of the most frequently quoted articles in the Chemical Engineering Science journal over the 2003-2006 four-year period.

- In May 2007 and in July 2008, was classified as first in her whole university for the evaluation concerning the support of young researchers at the Politecnico di Torino, on the basis of the number of publications quoted by WOS.

- In December 2007, winner of the IX edition of the "PREMIO SAPIO JUNIOR for ITALIAN RESEARCH" (http://www.premiosapio.it) on the basis of the results obtained in the research on "secondary nanoparticles from filters for the removal of diesel particulates and in other application contexts". A collection of the press-review on this award is available on the web page http://www.disat.polito.it/research/research_groups/crest/awards.

- In June 2008, following a selection procedure promoted by the Senate of the Politecnico di Torino, on the basis of the judgement of international referees on the profiles of potential candidates, ensured that one of the nine positions available for associate professorships would have gone to the Chemical Plants sector, on the basis of the procedure described in http://www.swas.polito.it/library/downloadfile.asp?id=42916.

- In October 2009, the paper "Biogas Purification for MCFC Applications" was nominated as being one of the 5 best papers by the Scientific Organizing Committee of "HYSYDAYS 2009 – 3rd World Congress of Young Scientists on Hydrogen Energy Systems". The paper was published in the International Journal of Hydrogen Energy.

- In 2007, 2008, 2009 and 2010, she was granted the support award attributed to young researchers at the Politecnico di Torino, pertaining to scientific research, on the basis of the number of publications quoted by WOS, to favor participation in international congresses.

- In June 2010, she received an award from the ITWIIN – Italian Association of Inventive and Innovative Women: the special DISTI communication award, in consideration of the efficacy of the presentation on the potential social and economic effects of scientific projects. A collection of the press-review on this award is available on the web page http://www.disat.polito.it/research/research_groups/crest/awards.

- In September 2011, given special mention by a jury of International experts at the European Union Women Inventors & Innovators Awards ceremony (Reykjavik – Iceland) in consideration of the efficacy of the presentation on the potential social and economic effects of scientific projects.

- In February 2013, the paper "Synthesis, Characterization and Photocatalytic Application of Novel TiO_2 Nanoparticles" by M. Hussain, R. Ceccarelli, D.L. Marchisio, D. Fino, N. Russo, F. Geobaldo, published in Chemical Engineering Journal – Volume 157, Issue 1, pages 45-51 in 2010, was nominated as one the eighth most cited paper in the Chemical Engineering Journal during the 10/2009 – 9/2010 period and got the qualification of "WOS Highly Cited Paper".

3.5 Participation in international conferences, as a distinguished invited speaker; participation in the scientific committees of International Conferences

Debora Fino was invited or keynote lecturer at the following congresses:

- Indo-Italian Workshop on emerging Technologies for Industrial Wastewater Treatment and Environment, September 2nd - 4th, 2002, National Environmental Engineering Research Institute (NEERI), Nagpur –India, "Diesel Particulate Abatement Via Wall-Flow Traps Based On Perovskite Catalysts", invited lecturer
- International Symposium on Nanotechnology in Environmental Protection and Pollution, 18th-21st June 2006, The Hong Kong University of Science & Technology, International Conference Centre Clear Water Bay Kowloon, Hong Kong, P.R. China, "Diesel Emission Control: Catalytic Filers for Particulate Removal", keynote lecturer
- Ecomondo, 8th November 2006, Rimini, Italy, "Nanoparticles and pollution in working clean confined environment: risks and possible solutions", invited speaker.
- Workshop on Nanotechnologies for Environmental Remediation, held at JRC Ispra on 16th-17th April 2007, invited lecturer on "Escape of nanoparticles during diesel particulate trap regeneration.
- Eco-Efficiency Biennal Workshop, Torino (Italy) 5th-9th June 2007, invited lecturer on "Catalytic Systems for the abatement of pollutions from Biomasses Combustion"
- 7th International Symposium on Advanced Gas Cleaning Technology, GCHT-7, Newcastle – Australia 23rd – 25th June, 2008, keynote lecturer on "Facing The Challenge of Nanoparticle Emissions From Combustion or Other Widespread Processes"
- Science Festival, 29th October-7th November 2010, Genoa, Italy, "Combustion and Smoke Science", invited lecturer
- La montagne en Rose Festival, 27th July 2013, Champoluc, Italy, "Nanaoparticle emissions control ", invited lecturer
- Invited keynote lecture "CeO_2-based catalysts with engineered morphologies for soot oxidation to enhance soot-catalyst contact" at the 2014 EMN Spring Meeting, Las Vegas, NV, USA - February 27th - March 2nd, 2014.
- Invited lecture at 7th COMFORT, National Trade Exhibition on Energy System, Technology and Plant, Catania, Italy, 18th April 2015, "The waste management in the metropolitan city of Turin, the start up of new waste treatment plant"
- Keynote lecturer at "ECOFOOD: Research & Innovation for the Improvement of the Sustainability of the Agricultural Food Chain" at the event "Waste: innovation and the role of SMEs and Society", Turin 10th July 2015.

She was also invited lecturer at the following advanced schools:

- International Car Training Institute Forum, Stuttgart (Germany) 21st- 22nd November 2007 and 7- 8 May 2008, invited lecturer on "Latest trends in materials and technologies for diesel particulate control"

- Advanced Course at ELASIS Fiat Research Centre, Pomigliano d'Arco (Na-Italy), 27th June 2008; invited lecturer on "Emission Control from internal combustion engines"

She was chairman at the following congresses:

- XIV National Congress on Catalyses GIC 2004, 6th-10th June 2004, Lerici, Italy.
- International Symposium on Nanotechnology in Environmental Protection and Pollution, 18th-21st June 2006, The Hong Kong University of Science & Technology, International Conference Centre Clear Water Bay Kowloon, Hong Kong, P.R. China
- American Institution of Chemical Engineers, Spring National Meeting, Orlando - USA, 23rd-27th April 2006, chairman of session "Fluid/particle reactions in energy and environmental systems".
- 8th International Conference on Engine for Automobiles, 12nd-17th September 2007, Capri (Na), Italy.
- XXXI Meeting of the Italian Section of the Combustion Institute, 17th- 20th June 2009, Torino, Italy.
- 12th International Waste Management and Landfill Symposium, SARDINIA 2009, 5th-9th October 2009 chairman of workshop on "Research activity in biological production of hydrogen".
- 9th International Conference on Engine & Vehicles, 13rd-18th September 2009, Capri (Na), Italy
- 10th International Conference on Engine & Vehicles, 11st-16th September 2011, Capri (Na), Italy
- XXXVI Meeting of the Italian Section of the Combustion Institute, 13rd-15th June 2013, Procida Island, Italy.
- International Conference on Industrial Processes for Nanomaterials (NanoEx$^{3\ \text{Explore, Explain, Exploit}}$), 1st July 2014 Cambridge, UK, chairman of the session "Process Technologies Relating to New Products".

and member of the following scientific committees:

- Since 2014, member of the Scientific Committee on NanoEx$^{3\ \text{Explore, Explain, Exploit}}$ – International Conference on Industrial Processes for Nanomaterials for Chemicals, Automotive and Aerospace.
- Since 2013, member of the GERSEQ – Electrochemistry for Environment and Energy Scientific Commission.

3.6. Management and organisation of exhibitions, compositions, drawings, design, hand-crated items, prototypes, artwork and their projects, databases and software, thematic maps, for the Academic Fields ("Settori Concorsuali"), where this is appropriate.

- In January 2007, Debora Fino organized the "HySchool 2007 – a winter school on the state of the art and the future of Hydrogen & Fuel Cell Technologies", a PhD course in which 65 students from various European, Asian and American countries participated.
- On 11st May 2015, she organized the event "Vindarte: the High quality Wine for extra-EU markets" (Il Vino di alta qualità per i mercati extra-UE), within the EXPO 2015 celebrations.
- She also organized and coordinated the event "ECOFOOD: The second life of food by-products. The story of a success project", 9th July 2015, Agorà – Turin, Italy, within the EXPO 2015 celebrations.

4. Teaching activity

4.1. Formal responsibility of Bachelor's (Laurea) and Master of Science's (Laurea Magistrale) degree courses in Italian and/or foreign universities.

Being a member of the College of Chemical and Materials Engineering and of the College of Energy Engineering, the teaching activity in the related Bachelor's or Master of Science's Courses, the assignment and the holding of the courses have been as follows:

Legend:

For each Academic Year are indicated: degree course name, and, in brackets, degree program, credits (CFU) assigned at the course, taught hours per each course.

Academic Year 2017-2018:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 10 CFU - 80 hours expected).
- Re-use and Energetic Valorization Processes (for all 3rd year Bachelor programs of Politecnico di Torino - Turin seat, 6 CFU – 40 hours expected).

Academic Year 2016-2017:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 10 CFU - 80 hours expected).
- Re-use and Energetic Valorization Processes (for all 3rd year Bachelor programs of Politecnico di Torino - Turin seat, 6 CFU – 40 hours expected).

Academic Year 2015-2016:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 8 CFU - 60 hours expected).
- Re-use and Energetic Valorization Processes (for all 3rd year Bachelor programs of Politecnico di Torino - Turin seat, 6 CFU – 40 hours expected).

Academic Year 2014-2015:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 8 CFU – 52 hours).
- Re-use and Energetic Valorization Processes (for all 3rd year Bachelor programs of Politecnico di Torino - Turin seat, 6 CFU – 37,5 hours).
- Processes and Technology of the Food Industry (co-holder with Eng. Davide Fissore) (Master of Science's Degree Course in Chemical Engineering and Sustainable Processes – Turin seat, 8 CFU - 40 hours).

Academic Year 2013-2014:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 8 CFU – 67,5 hours).
- Processes and Technology of the Food Industry (co-holder with Dr. Davide Fissore) (Master of Science's Degree Course in Chemical Engineering and Sustainable Processes – Turin seat, 8 CFU – 38,5 hours).

Academic Year 2012-2013:

- Chemical and Food Industry Plants (Bachelor's Degree Course in Chemical and Food Engineering – Turin seat, 8 CFU – 79.5 hours).

- Processes and Technology of the Food Industry (co-holder with Dr. Davide Fissore) (Master of Science's Degree Course in Chemical Engineering and Sustainable Processes – Turin seat, 8 CFU - 31,5 hours).

Academic Year 2011-2012:

- Recycle and Re-use in the Process Industry (Bachelor's Degree Course in Chemical and Food Engineering - Turin seat, 6 CFU – 19,5 hours).
- Processes and Technology of the Food Industry (co-holder with Dr. Davide Fissore) (Master of Science's Degree Course in Chemical Engineering and Sustainable Processes – Turin seat, 8 CFU – 27 hours).

Academic Year 2010-2011:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Mechanical Engineering – Mondovì seat, 5CFU - 51 hours).
- Recycle and Re-use in the Process Industry (Master of Science's Degree Course in Chemical Engineering – Turin seat, 5 CFU - 45 hours).

Academic Year 2009-2010:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Mechanical Engineering and in Civil Engineering for Water Management – Mondovì seat, 5 CFU - 56 hours).
- Recycle and Re-use in the Process Industry (Master of Science's Degree Course in Chemical Engineering – Turin, 5 CFU - 38 hours).

Academic Year 2008-2009:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Mechanical Engineering and in Civil Engineering for Water Management – Mondovì seat, 5 CFU - 50 hours).

Academic Year 2007-2008:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Mechanical Engineering and in Civil Engineering for Water Management – Mondovì seat, 5 CFU - 56 hours).
- Recycle and Re-use in the Process Industry (Master of Science's Degree Course in Chemical Engineering – Turin, 5 CFU - 54 hours).

Academic Year 2006-2007:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Mechanical Engineering and in Civil Engineering for Water Management – Mondovi seat, 5 CFU - 56 hours).
- Recycle and Re-use in the Process Industry (Master of Science's Degree Course in Chemical Engineering – Turin, 5 CFU - 54 hours).

Academic Year 2005-2006:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Agroidustrial Engineering and in Civil Engineering for Water Management – Mondovì seat, 5 CFU - 60 hours).
- Recycle and Re-use in the Process Industry (Master of Science's Degree Course in Chemical Engineering – Turin, 5 CFU - 58 hours).

Academic Year 2004-2005:

- Industrial Quality Management (Master of Science's Degree Course in Chemical Engineering Course – Turin seat, 2 CFU – 26 hours).
- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Agroidustrial Engineering and in Civil Engineering for Water Management – Mondovì seat, 5 CFU – 58 hours).
- Physics unit operations (Master of Science's Degree Course in Textile Engineering – Biella seat, 4 CFU – 38 hours).

- Recycle and Re-use in the process Industry (Master of Science's Degree Course in Chemical Engineering – Turin seat, 5 CFU - 56 hours).

Academic Year 2003-2004:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Chemical Engineering – Turin seat, 5 CFU – 44 hours).
- Treatment Plants for polluting Effluents (Master of Science's Degree Course in Agroidustrial Engineering – Mondovì seat, 5 CFU – 56 hours).
- Physics Unit Operations (Master of Science's Degree Course in Textile Engineering – Biella seat, 4 CFU – 32 hours).

Academic Year 2002-2003:

- Treatment Plants for Polluting Effluents (Master of Science's Degree Course in Chemical Engineering – Turin seat, 5 CFU – 46 hours).

Cycles of lessons and practice sessions on the following topics (the whole amount of taught hours over the entire carrier is indicated):

- Chemical Plants II (195 hours);
- Multiphase apparatus (6 hours);
- Environmental Chemical Engineering (20 hours);
- Industrial Chemistry III (2 hours);
- Catalysis for the Environment and Energy (57 hours);
- General Services/Economic bases (39 hours);
- Packaging Principles and Environmental Aspects (6 hours);
- Chemical Production Processes (41 hours).

4.2. Formal responsibility of PhD courses in Italian and/or foreign universities.

The following activities were carried out in the PhD school (SCUDO) at the Politecnico di Torino (cycles of lessons):

- Academic Year 2004-2005: "Innovative Catalysts for Application in the Field of Energy & Environment" (2 hours);
- Academic Year 2006-2007: "Innovative Diesel Engines Post-treatments" (12 hours);
- Academic Year 2006-2007: "Design of Micro and Nanotechnologies for Bioartificial Systems" (9 hours);
- Academic Year 2007-2008: "Advanced modelling of particulate and pollutant formation in turbulent combustion" (2 hours);
- Academic Year 2012-2013: "Towards ZEV (Zero Emissions Vehicles): technologies for the emissions vehicles abatement" (9 hours)
- Academic Year 2015-2016: "Towards ZEV (Zero Emissions Vehicles): technologies for the emissions vehicles abatement" (9 hours expected)

4.3. Formal responsibility of Specializing Master's courses and Life Learning courses in Italian and/or foreign universities in PhD courses.

She has been the holder of the chair for the following teaching Master's programs:

- Academic Year 2005-2006 "Air Pollution and Solid Waste Treatment" (60 hours - I level Master Course in in Agro-industrial Engineering).
- Academic Year 2011-2012 "Bio-fuels" (21 hours - II level Master Course in Programming and Management of Energy Systems).

- Academic Year 2013-2014 “Engine Management Systems” (17,5 hours - II level Master Course in Energy Management for Powertrains).

She also held a cycle of lessons in the following initiative:

- Academic Year 2011-2012 “Water in Production Processes” (8 hours - II level Master Course in Water Engineering for Civil and Industrial Drinkable Use).

4.4. Tutoring and thesis supervising activities at Bachelor’s and Master’s levels

Debora Fino was supervisor or co-supervisor of students in Chemical Engineering, Mechanical Engineering, Materials Science, Civil and Energy Engineering from years 2003 to 2017 of:

- 93 Bachelor’s students
- 127 Master of Science’s students

Since February 2014, in charge of two teams of 6 students each involved in the Excellence Programme ASP – *Alta Scuola Politecnica* - as coordinator of the MICRA (Micro Combined generation for Residential Application) project in collaboration with the AsjaGen company (ended in December 2016 and awarded as one of the best ASP Team of X Cycle) and since July 2016 in charge of 7 students for NGRwaste (a safe small scale thermal treatment for unsorted waste with recovery of energy) project in collaboration with the IRIS company.

5. Institutional offices and roles in Italian and foreign Universities and/or public and private institutions with scientific and/or technology transfer aims

5.1. Institutional offices and roles in the Governing bodies (Academic Senate, Board of Governors) of Italian and/or foreign universities.

- From the beginning of 2015, she acts as Waste Management Advisor for the Politecnico di Torino, inside the "Green Team", driving the Politecnico di Torino towards a Sustainable Path, coordinated by Prof. Romano Borchiellini, Vice Rector for Organization.
- In 2012 and 2014, she was member of the Commission for the final PhD examination in Materials Science and Technology – XXIV cycle and XXVI cycle, respectively (Politecnico di Torino).
- In 2013, she was member of the Commission for the final PhD examination in Industrial Chemistry and Chemical Engineering – XXV cycle (Politecnico di Milano).
- In February 2014, she was member of the admission committee of Erasmus Mundus SINCHEM Programme (The European Doctoral Programme on Sustainable Industrial Chemistry).
- She is currently Member of the scientific board of the Ph.D. School in Chemical Engineering of the Politecnico di Torino.
- She is currently Member of the College of Chemical and Materials Engineering and of the College of Energy Engineering.

5.2. Institutional offices and roles in teaching and research structures (Departments, Faculties, Schools, Colleges) and other service activities developed in Italian and Foreign Universities.

Since 2010, Debora Fino is in charge of the Nanotechnology sector pertaining to the BAF project (Regione Piemonte High Training Announcement – BAF, Bando Alta Formazione, eight sectors in total) as part of the PhD School of the Politecnico di Torino, funded by European Social Funds (POR FSE 2007-2013), with the aim of favoring the insertion of PhD students into the production, services and professional world. The objective is to promote competitiveness of the Piedmont socio-economic system and to favor the emergence of qualified requests of knowledge and innovation from companies, and to make highly qualified people who are capable of interpreting, orienting and responding to an elevated scientific and technological knowledge requirement available, but also of favoring the most appropriate positioning as possible for the graduates who leave the university (see https://didattica.polito.it/pls/portal30/stagejob.public_site.newdynamic?p_id=956).

5.3. Management roles in Universities, as part of Faculty duties

- From October 2006 to December 2011, elected member of the Council of the Department of Materials Science and Chemical Engineering.
- Since 2006, representative of the Department of Applied Science and Technology in the Scientific Committee for relations with General Motors.
- Since 2009, representative of the Department of Applied Science and Technology for relations with Magneti Marelli pertaining to the coordination of research undertaken in the diesel engine after-treatment sector.
- Since 2009 representative of the Department of Applied Science and Technology for relations with SMAT – Società Metropolitana Acque Torino (Turin Drinkable & Waste Water treatment Company)

for the coordination of research in the sector pertaining to innovative treatments for the purification of drinkable water and for the treatment of wastewater.

5.4. Offices in the Governing bodies, Board of Governors, Scientific Advisory Boards of public and private institutions, with scientific and technology transfer aims.

- In April 2009, she was elected member of the Italian section of the Scientific Committee of The Combustion Institute (www.combustioninstitute.it), a position held until November 2014 when the 5-years mandate expired.

- In May 2006 Debora Fino was appointed by the Rector of the Politecnico di Torino, Prof. Francesco Profumo, as the coordinator of the POLITO delegation attending the B-BICE "Bi-Regional Workshop in Environment" (1st-2nd June 2006, Brasilia, Brasil) for the sake of strengthening the Europe-Latin America research cooperation in the environment protection field.

- Since April 2005 she has acting as a consultant for the Provincia di Torino in environmental evaluation matters (VIA, VAS, CDS, IPPC, AIA), having analyzed over 15 companies in this role (e.g AMIAT, Rockwood Italia, Lipitalia, Liri Industriali, Sirio Ecologia,…). The purpose of the evaluations is for the companies to attain Environmental Impact Authorizations. She has also been a consultant for the Provincia di Imperia on similar matters in the year 2006.

- In August 2014, she was appointed by the Public Prosecutor, Dr. Raffaele Guarinello, as a technical consultant for matters concerning emissions from internal diesel combustion engines and anti-particulate filters.

- In October 2016, she was elected as Student Ombudsman by the Joint Committee for Education of Politecnico di Torino.

Place and date:
Torino, 19/10/2017

Signature:

In compliance with the law 196/03, I authorize the treatment and protection of personal data concerning me.

In riferimento alla legge 196/2003 autorizzo espressamente l'utilizzo dei dati personali riportati nel presente curriculum vitae.