BENSAID Samir
CURRICULUM VITAE AND TRACK-RECORD OF SAMIR BENSAID

PERSONAL INFORMATION
Family name, First name: BENSAID Samir
Date of birth: 01/02/1983
Nationality: Italian
URL for web site: http://www.swas.polito.it/rubrica/scheda_pers.asp?matricola=019403

• EDUCATION
2010 PhD in Chemical Engineering
Department of Materials Science and Chemical Engineering, Politecnico di Torino, Italy
2006 Master of Science in Chemical Engineering cum laude
Department of Materials Science and Chemical Engineering, Politecnico di Torino, Italy
2006 Grant Researcher (Master level)
Commissariat à l'Energie Atomique, Saclay, France
2005 – 2006 Master of Science Erasmus Student
Department of Chemical Engineering, University of Strathclyde, Glasgow, Scotland, UK
2004 Bachelor in Chemical Engineering cum laude
Department of Materials Science and Chemical Engineering, Politecnico di Torino, Italy

• CURRENT POSITION
June 2015 Associate Professor of Chemical Engineering (sector: Industrial Chemistry)
Department of Applied Science and Technology, Politecnico di Torino, Italy

• PREVIOUS POSITIONS
2011 – June 2015 Assistant Professor of Chemical Engineering (sector: Industrial Chemistry)
Department of Applied Science and Technology, Politecnico di Torino, Italy
2015 Visiting Research Scholar
Department of Chemical and Biomolecular Engineering, University of Houston, Taxas, USA
2010 – 2011 Post-Doc Grant Researcher
Department of Applied Science and Technology, Politecnico di Torino, Italy

• INSTITUTIONAL RESPONSIBILITIES
2014 – 2018 Member of the PhD Program in Chemical Engineering, Politecnico di Torino, Italy
2013 – 2018 Internal Seminars on Biofuels directed to Undergraduates of the Iowa State University (Ames, Iowa, USA) visiting Politecnico di Torino, Italy.
2012 – 2018 Responsible for Orientation to the Bachelor and Master programs of Chemical Engineering, Politecnico di Torino, Italy.
2011 – 2018 Faculty Member, Department of Applied Science and Technology, Politecnico di Torino, Italy

• COORDINATION OF RESEARCH PROJECTS
He has been coordinator of the project SOLYST "Fundamental study of gas-soot-catalyst interactions in multi-functional catalytic converters within the automotive sector", funded by the Italian Ministry of Education, University and Research (MIUR), from March 2013 to September 2016.
This project granted a new tenure-track assistant professor position to Politecnico di Torino.
- International collaboration: prof. Michiel Makkee from Technical University of Delft, The Netherlands.
- Role: project coordinator of the 4 research teams (Politecnico di Torino, Politecnico di Milano, Università di Udine, CNR-Istituto Ricerche sulla Combustione), and local scientific responsible for Politecnico di Torino.

He is currently responsible for Politecnico di Torino of 3 European projects Horizon H2020:

1) "Innovative large-scale energy STOragE technologies AND Power-to-Gas concepts after Optimisation" (acronym STOREandGO)", from the call LCE-09-2015. Duration 48 months (2016-2020).
2) "Recycling carbon dioxide in the cement industry to produce added-value additives: a step towards a CO2 circular economy" (acronym RECODE), from the call H2020-SPIRE-2017. Duration 48 months (2017-2021).
3) ""Biorefinery combining HTL and FT to convert wet and solid organic, industrial wastes into 2nd generation biofuels with highest efficiency" (acronym HEAT-TO-FUEL), from the call. H2020-LCE-2017-RES-CCS-RIA. Duration 48 months (2017-2021).

• COMMISSIONS OF TRUST AND REVIEWING
2013 Evaluator of PRIN and SIR Research projects for the Italian Ministry of Education, University and Research (MIUR), Italy.
2009 – 2015 Reviewer of Applied Catalysis A: General, Applied Catalysis B: Environmental, Applied Surface Science, Catalysis Today, Chemical Engineering Journal, Chemical Engineering Science, Fibers, Green Processing and Synthesis, International Journal of Hydrogen Energy, Powder Technology.

• ORGANISATION OF SCIENTIFIC MEETINGS
2009 Scientific Committee Member and Moderator of the International Congress HYSYDAYS - 3rd World Congress of Young Scientists on Hydrogen Energy Systems, held in Torino (Italy) on 07th-09th October 2009.
2018 Scientific Committee Member of the 41st Meeting of the Italian Section of the Combustion Institute, to be held in Sorrento on 23-26th May 2018.

• INVITATIONS TO INTERNATIONAL CONFERENCES/ADVANCED SCHOOLS
2012 Invited Speaker at EBTC CONFERENCE & WORKSHOP ON R2B IN HIGH LEVEL TRANSPORT PLANNING "Use of energy and emissions by the Indian Transport System: European experiences and future challenges for Indian mobility and logistics", New Delhi, 12th October 2012.
2016 Invited Lecturer at the EMN Meeting on Ceramics: Symposium of Ceramic Nanostructures. "CO and Soot catalytic oxidation with Ce-Zr-Pr oxides", Hong Kong, 25-28 January 2016.

• MAJOR COLLABORATIONS
-Prof. Dan Luss and Prof. Vemuri Balakotaiah.
Topic: After-treatment of diesel engine flue gases: Selective Catalytic Reduction of NOx coupled to soot filtration.
Institution: Department of Chemical and Biomolecular Engineering, University of Houston, Houston (Taxas), USA.
Framework: Visiting Research Scholar in 2015 at University of Houston.

-Prof. Michiel Makkee.
Topic: After-treatment of diesel engine flue gases: In-situ microscopy for the observation of the soot-catalyst contact during soot oxidation.
Institution: Technical University of Delft, Delft, The Netherlands.
Framework: Project SOLYST (Project coordinator: Samir Bensaid), see the project-related section.

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS
2010 – 2018 n° 11 PhD or Post-docs supervised, Department of Applied Science and Technology, Politecnico di Torino, Italy.

2014 n°1 Master Student in co-supervision with the Technical University of Delft, The Netherlands.
2013 – 2018 Graduate Student Advisor (n° 29 students), Politecnico di Torino, Italy
2012 – 2018 Undergraduate Student Advisor of (n° 8 students), Politecnico di Torino, Italy

• TEACHING ACTIVITIES
Politecnico di Torino (Italy)
2011 – 2018 Main Professor, Innovation in Chemical Plant Design, M.Sc. Chemical Engineering.
2011 – 2018 Professor, Process Simulation and Industrial Chemistry, M.Sc. Chemical Engineering.
2011 – 2018 Professor, Plants for the Chemical and Food Industry, Bachelor Chemical Engineering.
2013 – 2018 Professor, Petroleum Engineering: Process Simulation, ENI Post-Graduate Master.
2012 Main Professor, Professional Health and Safety Management, M.Sc. Automotive Engineering

Université de Savoie à Chambéry (France)
2014-2018 Invited Professor, Chimie Industrielle/Industrial Chemistry, M.Sc. Environmental Chemistry.

• PUBLICATION DETAILS and RESEARCH INTERESTS
He is author of 87 international scientific papers since 2009, in peer-reviewed journals or book chapters, according to Scopus. His H-index is 20, and he has received 357 citations in 2017.

His main research interests are focused on the following topics:

a. Abatement of soot and nitrogen oxides emitted by vehicles or stationary sources
-Characterization of diesel engine emissions (CO, HC, NOx, soot) and dynamics of non-catalytic combustion inside diesel particulate filters (DPFs);
-Fluid-dynamic simulation and experimental characterization of soot filtration and oxidation within DPFs;
-Development of catalysts to reduce the soot oxidation temperature during DPF regeneration: engineered morphologies to enhance intrinsic activity and contact conditions;
-Development of catalysts for the simultaneous abatement of soot and NOx, and scale-up of the system for real engine implementation;
-Development of catalysts for H2-mediated selective catalytic reduction of NOx;
-Development of catalysts for N2O decomposition (for adipic acid and nitric acid production plants);
-Development of catalysts for the abatement of CO, VOC and soot from domestic burners;
-Novel operating modes of filter regeneration downstream a methane/biogas reformer in the absence of O2;
-Fluid-dynamic simulation of micro-mixers for the production of catalysts by turbulent precipitation.

b. Process simulation and optimization in the field of decentralized power production
-Simulation of the diesel reforming section of a 500kWel system based on Molten Carbonate Fuel Cells, for marine applications;
-Simulation of the biogas reforming section of a 250kWel system based on Molten Carbonate Fuel Cells, for hydrogen and power production;
-Simulation of the partial oxidation section of a 2kWel system based on Solid Oxide Fuel Cells, for domestic power production;
-Design of a reactor for the methanation of CO2 and H2 at 15 bar, the latter produced by a Solid Oxide Electrolyser Cell.

c. Biofuels production processes
-Numerical modeling cellulose enzymatic hydrolysis, at high solid concentration (40%), for the production of 2nd generation bioethanol;
-Determination of the depolimerization kinetics of cellulose and hemicellulose in the steam explosion process;
-Process simulation of the HTU™ liquefaction process of biomasses, for the production of de-oxygenated bio-crude oil.

-Design and operation of a pilot-size reactor for the production of biodiesel in supercritical conditions (350°C, 250 bar).

d. Water-splitting catalyst development
-Modeling of the individual components of a photo-electrochemical cell for the production of solar fuels.
-Development of catalysts for water oxidation: Co and Mn oxides, Bismuth Vanadate.
-Design and physical modeling of a testing facility for the development of water oxidation catalysts.

e. Food industry processes' optimization
-Process simulation of a full-scale torrefaction plant, and development of catalysts for the abatement of NOx emissions from N-containing VOCs.
-Thermo-chemical conversion of agricultural refuses by gasification and pyrolysis: lab-and pilot-scale experiments.