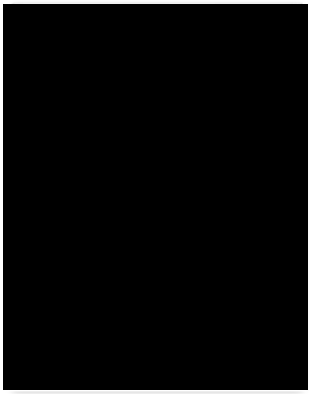

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Academic record. After graduating in Industrial Chemistry at the University of Turin, he started research activity at the Department of Materials Science and Chemical Engineering at the Politecnico di Torino, first as a fellow and then as a PhD (PhD degree in Material Science and Technology in 2007). Since then, he has conducted research at the same department and, thereafter, at the Center for Human Space Robotics of the Italian Institute of Technology. Since 2012 he is researcher at the Department of Applied Science and Technology at the Politecnico di Torino, where he is member of the Institute of Chemistry and of the CHENERGY research group (in the *Surf-Chem* research team, http://www.disat.polito.it/research/research_groups/chenergy). He is in charge of a Chemistry course as regular teacher.

Research Activity The study of chemical and chemical-physical foundations of materials such as oxides, microporous and mesoporous systems (*e.g.* mesoporous silicas, zeolites, templated and activated carbons, imogolite nanotubes), of their properties and extent of applications in catalysis, water remediation and gas adsorption field are the main scientific interests cultivated during his path to professional growth. Born as IR spectrosopist, focusing on the characterization of catalyst surface by means of probe molecules adsorption, he has later on deepened the use of this technique by applying the Variable Temperature IR (VT-IR) Spectroscopy in thermodynamic studies of adsorption processes (*e.g.* H_2 storage or CO_2 capture). The paramount importance of the porous architecture (both in catalysis and adsorption) of the investigated materials prompted him to deepen the knowledge of the theories underlying experimental techniques such as the adsorption/desorption of N_2 and H_2 at 77 K and of CO_2 at 273 K. Recently he has focused attention on the study of Mn and Co based novel catalysts for water oxidation, a reaction recognized as a bottleneck for the realization of the so called "artificial leaf" (*i.e.* sun-light-driven water splitting for H_2 production), being interested in both photo-catalytic and electrochemical aspects of this research field. His major achievements in this research filed are: *i)* the first use of cobalt aluminophosphate CoAPO5 as a water oxidation catalyst was reported; *ii)* the development an original model for studying the kinetics of water oxidation as catalysed by Co and Mn oxides in a bubbling reactor. Very recently, he extended his activity to the study of catalysts for the oxygen reduction reaction (ORR in Fuel Cells application) with the broader aim of developing non-noble-metals-based bifunctional catalysts active in both oxygen reduction and evolution reactions.

He has taken part to the organization and co-ordination of various research projects founded by either public (European Community, ESA, Italian Minister of University and Research, Regione Piemonte) or private entities. He established fruitful collaborations with Italian and foreign research groups (Prof. F. Cavani - University of Bologna; Prof. F. Di Renzo – ENSCM - CNRS Montpellier; Prof. P. Massiani - Laboratoire de réactivité de Surface - UPMC, Prof. CO Arean - University of the Balearic Islands; Prof. R. Ryoo Center for Functional Nanomaterials @ KAIST, Korea) and is co-author of *ca.* 60 publications in international peer-reviewed journals.