



### Dr. Paola Rivolo, Curriculum Vitae

Paola Rivolo is currently Research Technician at Politecnico di Torino in the Department of Applied Science and Technology, within the Institute of Fundamental Physics and Materials for Nanotechnologies. In 1999, she received the master degree in Chemistry from the University of Turin and, in 2004, the PhD Degree in Materials Science and Technology from the Politecnico di Torino. In 2008, she received from the Italian Ministry the award for a business idea within the framework "Giovani idee cambiano l'Italia -Young Ideas change Italy" Grants so winning a loan for the realization of a small production line based on the inkjet printing technology applied to the field of conductive and semiconductive polymeric inks. Nowadays, she is co-founder of Politronica Ink-jet Printing srl, SME, spin-off of Politecnico di Torino. In 2014 and 2018, she was appointed by the "Abilitazione Nazionale" program of the Italian Ministry eligible to be Associate Professor of Chemistry for Technologies and Associate Professor of Experimental Physics of Matter, respectively.

Her teaching activity at Politecnico di Torino dealt with the field of chemistry and materials science for nanotechnologies. Since 2009 until 2015, she was teacher of "Chemistry-Exercises" in the frame of the "Chemistry" I level Course for Engineering and since 2010 until 2015, she was in charge of a teaching module within the II level International (Italy-France-Switzerland) Course of 'Materials for MEMs and characterizations of technological processes" for the Master Degree in Nanotechnologies Engineering. She is tutor and co-tutor of more than 10 Master Degree Thesis and 2 PhD Thesis.

Concerning her scientific work, PR is involved in the frame of highly multidisciplinary research activities related to sensors and, generally, micro-devices. Starting from a chemistry background, she gained an established knowledge in physics and nanotechnology for production of micro-devices mainly aimed to sensing applications.

In 1999-2003, the scientific activity of PR mainly concerned the synthesis (by electrochemical techniques) and surface chemical modification of porous silicon-based materials (zeolites, porous silicon and porous silica) for applications in catalysis and chemical and optical sensing. In this period, she learnt the use of several surface characterization techniques such as i) *in situ* FTIR Spectroscopy aimed to the study of surface chemical response of materials upon the adsorption of probe molecules from the gas or vapour phase; ii) UV-Visible spectroscopy aimed to investigate both the optical properties of suitably dye-modified nanostructured materials, iii) waveguides characterization on optical benches for the study of the sensing efficiency of devices. This last expertise was learnt in 2002, when she spent 6 months, as Visitor Scientist, at the "Laboratoire d'Optronique" dell'Ecole Nationale Supérieure des Sciences Appliquées et de Technologie de Lannion – Department of University of Rennes (FR).

In 2004-2005, granted by a research fellowship for young researchers, assigned by CRT Foundation– Lagrange Project - Italy, PR worked on the optimization of thin films plasma-assisted deposition processes (PECVD, e-beam/i-beam systems, sputtering, thermal evaporation etc.) in High-Vacuum conditions and on the characterization of multilayer structures (edge filters, mirrors, etc.) for optical devices (ELETTRORAVA SpA, TO-Italy – Physics Department, Politecnico di Torino).

In 2006-2014, PR research activity was mainly devoted to the chemical modification of several materials surface, both inorganic (oxides and metals) and polymeric, aimed to the functionalization of optical (based on Bloch Surface Waves and Surface Enhanced Raman Scattering principles) and electromechanical devices for bio-diagnostics. She gained expertise on thin film plasma polymerisation and wet chemical Self-Assembly Monolayers (alkanthiols, organosilanes) surface derivatization. She became skilled in other characterization techniques such as Contact Angle analysis, Fluorescence Spectroscopy and Microscopy, Raman Spectroscopy and XPS.

Since 2015, she focused on energy storage devices and, in particular, on the synthesis of graphene-based aerogels electrodes for supercapacitors and related physico-chemical characterization.

More recently, her research activity is mainly devoted to the field of metal-dielectric nanostructures integrated in otpofluidic chips for SERS analysis applied to biodiagnostics. In particular, she started focusing on 3D silver-graphene hybrid aerogels chemically functionalized by macrocyclic molecules (e.g. porphyrins, phtalocyanines).

PR is co-author of about 70 papers on peer-reviewed journals, co-inventor in 4 patents, participated to several seminars, conferences, and schools and was involved in more than 30 research projects, funded by either public (European Community, Italian Minister of University and Research, Regione Piemonte) or private entities. In 2011-2013, PR was PoliTo Unit Responsible for the Regional Project: MICRODIBI – Diamond Biochips for drug screening and biomedical applications.