Curriculum Vitae of
Monica Santamaria

PERSONAL DATA

Birth: 30/11/1973 in Licata (Italy) Nationality: Italian
Marital status: Married, 2 kids Address: Via A. Palminteri 373, 90135 Palermo, Italy
Tel: +39 091 23863787 Fax: +39 091 7025020
e-mail: monica.santamaria@unipa.it

EDUCATION

Jan 1998 - Feb 2001	Ph.D. in Electrochemical Engineering, at Politecnico di Milano.
Oct 1991 - Apr 1997	Master degree in Chemical Engineering at Chemical Engineering Department of Università degli Studi di Palermo, achieved with mark 110/110 cum laude.
July 1991	Classical Leaving Certificate (high school) achieved with mark 60/60 cum laude, at "Liceo Classico V. Linares - Licata".

APPOINTMENTS

Dec 2010 - present	Professor of Electrochemical energy conversion and storage at Università degli Studi di Palermo
April 2002 - Dec 2010	Assistant professor of Applied Electrochemistry

HONOURS AND AWARDS

July 2006	Hans-Jürgen Engell Prize 2006, awarded by the International Society of Electrochemistry "*for her excellent work in the characterization of anodic oxide films as a function of their degree of hydration by photocurrent spectroscopy and electrochemical impedance spectroscopy, and the development of a model describing the electronic properties of amorphous semiconductor/electrolyte junctions*".
March 2009	Invited lecture at the Faculty of Chemistry of Università di Palermo (Italy) on "*Electrochemical Material Science: challenges and perspectives*".
September 2010	Invited lecture during E-MRS 2010 Fall Meeting, September 13-17, 2010, Warsaw, Poland on "*Photocurrent Spectroscopy Applied to the Characterization of Compositionally and Structurally Graded Materials: from Thin Films to Nanostructures*"
September 2010	Invited lecture during The 61st annual meeting of International Society of Electrochemistry, Nice (France) September 26th - October1st, 2010. on *"The Influence of Surface Treatment on the Kinetic of Growth of Anodic Films on Magnesium in Alkaline Solution"*
September 2013	Invited lecture during The 64th annual meeting of International Society of Electrochemistry, Queretaro (Mexico) September 8th -13th, 2013 on *"Effect of Thermal Treatment on the Physico-Chemical Properties of Porous Anodic Films on Iron"*
June 2014	Invited lecture during 2nd International Symposium on Anodizing Science and Technology (AST2014) Sapporo (Japan), 4-7 June 2014.on "Effect of incorporation of foreign species on the solid state properties of anodic films on Ti"

MAIN RESEARCH INTERESTS

Research activity is mainly concentrated on:
1- Mechanism of growth and breakdown of anodic oxide films on valve-metals and valve-metals alloys.
This research theme is devoted to understand the mechanism of growth and breakdown of anodic oxide films which are currently used for the fabrication of electrolytic capacitors and as possible candidates for replacing SiO_2 oxide in thin film of metal/oxide/semiconductor (MOS and MOM) structures. The final aim is to optimize abodizing process and develop dielectric film with tailored properties.

2 - Characterization of corrosion layers and passive films by Electrochemical Impedance Spectroscopy (EIS) and Photocurrent Spectroscopy (PCS).
Research in this subject is aimed to correlate the corrosion behaviour of metals and alloys to the nature of passivating film and corrosion layer by in situ analytical techniques. In the case of PCS technique a semiempirical correlation between the optical band gap of corrosion layer and film composition has been proposed and it is still under scrutiny for complex systems.
3 - Photoelectrochemical fabrication of hybrid inorganic/organic (conducting polymers) junctions
The expertise on the formation of anodic films and on their photoelectrochemical properties have been used to design the fabrication of metal/oxide/conducting polymers junctions to be used in electronic components. Photoelectrochemical processes were used to grow conducting polymers on semiconducting or insulating oxides.
4 - Electrochemical growth of nanostructure by template assisted method or by anodizing.
The aim of this research is the electrochemical production of nanostructured materials for possible applications in different technological fields (catalysis, photoelectrochemical energy conversion, etc) by using porous alumina membranes as template or by anodizing metals in properly selected conditions. A study of the influence of electrochemical parameters on the properties of nanowires or nanotubes and their characterization, by in situ and ex situ techniques, are carried out in order to tailor their properties.
5 - Preparation of proton conductors for low temperature fuel cells.
This research is devoted to the fabrication of porous alumina membranes with assigned porous structure, depending on the anodizing conditions, as well as to the functionalization of such membranes with ionic conductors to be used in thin film fuel cells working in a rather wide range of temperatures. More, recently research efforts have devoted to the fabrication of hybrid organic/inorganic proton conducting membranes for low temperature H_2 fed fuel cells.
She presented the results of her work in several international meetings and she is author of more than 90 papers published on international journals and books.

TEACHING EXPERIENCE

September 2014 – present	Course for master students in "Corrosion" at the Scuola Politecnica of Università di Palermo
September 2010 - present	Course for undergraduate students in "Chemistry" at the Engineering Faculty of Università di Palermo
Jan 2006 - present	Course for undergraduate students in "Electrochemical Energy Conversion and Storage" at the Engineering Faculty of Università di Palermo
Jan 2001 - present	Lab. Courses and tutoring for undergraduate students of "Applied Electrochemistry" at the Engineering Faculty of Università di Palermo

SELECTED SYNERGISTIC ACTIVITIES

Acted as reviewer for:
Jour5nal of Physical Chemistry, Journal of Electrochemical Society, Electrochimica Acta, Thin Solid Films, Corrosion Science, Corrosion Engineering Science and Technology, Electrochemistry Communications, Journal of Alloys and Compound, Journal of Applied Electrochemistry, Journal of Biomedical Materials Research, Journal of Surface Science, Corrosion, and others.

Member of
Italian Chemical Society
Electrochemical Society
International Society of Electrochemistry

Coordinator of the organizing committee of “Corrosion Science and Engineering” Symposium of the 63rd ISE annual meeting (19-24 August, 2012, Prague, Czech Republic)
Member of the organizing committee of “Corrosion, Passivity and Oxide Films” Symposium of the 65th ISE annual meeting (31August – 5 Sepetember, 2014, Lausanne, Swiss)
Member of the organizing committee of 17th Topical Meeting of the International Society of Electrochemistry, “Multi-scaled Analysis of Electrochemical Systems” al 31 May - 3 June 2015, Saint-Malo, France.
Member of the Committee in charge of awarding the International Society of Electrochemistry Prize for Electrochemical Materials Science

INVITED TUTORIAL LUCTURES

“*Photocurrent Spectroscopy applied to the characterization of passive films on metals and alloys*" at POLITEHNICA of Bucharest (Romania) June 2002

"Photocurrent Spectroscopy Applied to the Characterization of Compositionally and Structurally Tailored Materials: from Thin Films to Nanostructures" at Ruhr-Universität Bochum, Bochum (Germany) June 2013

RECENT COLLABORATIONS

G. Thompson e Prof. P. Skeldon, Corrosion and Protection Centre - School of Materials, The University of Manchester (UK)
L. Anicai, Department of Environmental Protection and Technological Development Petromservice SA, str. Gral Budisteanu 11 bis, Bucharest (Romania);
K. Shimizu, University Chemical Laboratory, Keio University, 4-1-1 Hiyoshi, Yokohama 223 (Japan);
H. Habazaki, Graduate School of Engineering, Hokkaido University, Sapporo 060-8628 (Japan)
P. Marcus, CNRS-ENSCP (UMR 7045), Ecole Nationale Supérieure de Chimie de Paris.

RESEARCH FUNDS

Research has been funded by both Industry (Becromal S.p.A. Milan Italy, Novelis Global Technology Center – Kingston Canada, Roche Diagnostics GmbH Germany) and Public national and international agencies (National Minister of Education, Regional Agency of Research and Development, US-Army).