Clara Santato
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Editor of the Journal of Power Sources

EDUCATION

Université de Genève, Switzerland
1996-2001 Doctorat ès Sciences (mention Chimie) *Preparation and characterization of nanostructured WO_3 films as photoanodes in photoelectrochemical devices* Supervisor: Prof. J. Augustynski.
Università degli Studi di Bologna, Italy
1989-1995 Laurea in Chimica (equivalent to BSc + MSc degrees) *Photoredox pathways for the polymerization of a pyrrole-substituted ruthenium tris (bipyridyl) complex* Supervisors: Prof. S. Roffia, V. Balzani and Dr A. Deronzier. MSc experimental work performed at Université Joseph Fourier, Grenoble.

EXPERIENCE

Polytechnique Montreal, Montreal, QC, Canada
Full Professor (*From June 2017*): Continue programs listed below and initiate research programs in (i) sustainable materials, processes and devices including biodegradation aspects of electrochemical energy storage devices and (ii) organic solar batteries. Strong collaboration with industry and the Canadian National Research Council.
Associate Professor (*August 2013 to July 2017*): Continue programs listed below and initiate research program in ionic gating of semiconducting films (metal oxides such as TiO_2, WO_3, SnO_2 and organic semiconductors) for flexible electronics and bioelectronics.
Tenured Assistant Professor *(August 2011 to July2013*): Initiate research on natural materials (melanin biopigments) for environmentally friendly electrochemical energy storage as well as bioelectronics. Manage an interdisciplinary group of undergraduate and graduate students and postdocs with backgrounds in chemistry, materials science, engineering physics and electrical engineering. Collaborate extensively with academic and industrial research groups, in Canada and abroad.
Assistant Professor *(August 2007 to August 2011)*: Established research group in organic electronics.
Cornell University, NY, USA *August 2007-August 2011*
Visiting Scientist (Prof. G. Malliaras, Materials Science and Engineering): Research on organic bioelectronics and organic electrochemical transistors.
INRS-EMT, Montreal, QC, Canada *May 2006-August 2007*
Visiting Scientist (Prof. F. Rosei, Énergie Matériaux Télécommunications): Research on environmentally friendly organic light-emitting transistors.
McGill University, Montreal, QC, Canada *May 2006-August 2007*
Visiting Scientist (Prof. D. Perepichka, Chemistry Department): Research on the self-assembly of organic semiconducting polymers at surfaces.
Purdue University, Indiana, USA *March-November 2005*
Visiting Scientist (Prof. K.-S. Choi, Chemistry): Research on photoelectrochemistry of tin oxides.
Italian National Research Council, ISMN, Bologna, Italy *November 2002-December 2011*
Permanent Research Scientist: Research on nucleation and growth of organic semiconductors. Organic light-emitting transistors: fabrication (solution-based processing and thermal evaporation of the thin organic films), characterization (electrical and optical measurements, quantum efficiency).
Italian National Research Council, IMAI, Roma, Italy *December 2001-October 2002*
Permanent Research Scientist: Research on laser crystallization of Si thin films.
National renewable Energy Laboratory, Colorado, USA *May-September 1998*
Visiting PhD Student (supervisor Dr J. Turner): Electrochromic properties of sol-gel WO_3 thin films.

SELECTED, RECENT INVITED TALKS AT CONFERENCES AND WORKSHOPS

Towards melanin-based integrated energy conversion/storage devices MCARE 2018, Vancouver 2018 • *The wonderful world of melanin* MRS Communications **Award Lecture**, MRS Spring Meeting, Phoenix, USA, 2018 • *Green solar batteries* ICACC 2018, Daytona Beach 2018 • *Integrating transistor and energy storage functions: the concept of Transcap,* Int. Display Workshop, Sendai, Japan, 2017 • *Multifunctional iontronic devices based on metal oxides,* ICMAT 2017, Singapore • *Electrolyte/semiconductor interfaces for microelectronics,* ECHEM 2017, Italy (**keynote**) • *Interfaces metal oxide/ pigment eumelanin for solar energy conversion,* PACRIM 2017, Hawaii • *Insights on the chromophoric properties of the pigment eumelanin for solar energy conversion,* MCARE 2017, South Korea • *Nanostructured metal oxide films and interfaces: structure, charge transport, devices*, 4th Intern. Workshop on Nanotechnology, Renewable Energy & Sustainability, Xi'an, China, Intern. Res. Center for Renewable Energy 2016 (**keynote**) • *Mixed ionic and electronic conduction in biopolymers* Spring MRS Meeting, Phoenix AZ 2016 • *Eumelanin supercapacitors*, IMRS, Cancun, Mexico 2015 • *Electrochemical energy storage in eumelanin films* SPIE San Diego California 2015 • *Transcap: A new integrated hybrid supercapacitor and electrolyte-gated transistor device* SPIE San Diego California 2015 • *Metal-eumelanin interactions for bioelectronics and memories* Electrochemical Society Meeting, Chicago 2015 • *Electrolyte-gating in PCBM thin films* Electrochemical Society Meeting, Chicago 2015.

SELECTED, RECENT INVITED SEMINARS

Ionic gating of metal oxide thin films for flexible electronics, Politecnico di Milano 2018 • *Green electronics,* University of Toronto 2018 • *Melanin biopigments from bioelectronics to sustainable electronics*, Northwestern University, USA 2017 • *Electrolyte gating: materials and devices,* Wake Forest University, NC, USA 2015 • *Protonic and electronic transport in eumelanin thin films*, University of Washington, USA 2014.

RECOGNITIONS AND HONORS

MRS Communications Award Lecture (2018) • IEEE Senior Member (2017) • 2015 Italy-Canada Innovation Award • Government of Canada/CBIE Postdoctoral Award to work at INRS, QC (2006-2007) • Swiss NSF Postdoc Fellowship (2003, offer declined for permanent position at Italian CNR).

MORE SIGNIFICANT PUBLICATIONS

- Lan, T, Soavi, F. Marcaccio, M. Brunner, P.-L., Sayago J., Santato C. (2018) *Electrolyte-gated transistors based on phenyl-C61-butyric acid methyl ester (PCBM) films: bridging redox properties, charge carrier transport and device performance.* Chem. Commun. 54, 5490.
- Kumar, P., Di Mauro, E., Zhang, S., Pezzella, A., Soavi, F., Santato, C. & Cicoira, F. (2016). *Melanin-based flexible supercapacitors*. JMC C, 4(40), 9516-9525.
- Meng, X., Natile, M.M., Rochefort, D., Soavi, F. & Santato, C. (2015). *Electrolyte-Gated WO_3 Transistors: Electrochemistry, Structure, and Device Performance.* JPC C, 119(37), 21732-21738.
- Wunsche, J., Pezzella, A., Soavi, F., Cicoira, F., Rolandi, M. & Santato, C. (2015). *Protonic and electronic transport in hydrated thin films of the pigment eumelanin.* Chem. Mater., 27(2), 436-442.
- Sayago, J., Soavi, F., Cicoira, F. & Santato, C. (2014). *TransCap: A monolithically integrated supercapacitor and electrolyte-gated transistor.* JMC C, 2(48), 10273-10276.
- Santato, C., Cicoira, F. & Martel, R. (2011). *Organic photonics: Spotlight on organic transistors*. Nature Photonics, 5(7), 392-393.
- Cicoira, F., Santato, C., Melucci, M., Favaretto, L., Gazzano, M., Muccini, M. & Barbarella, G. (2006). *Organic light-emitting transistors based on solution-cast and vacuum-sublimed films of a rigid core thiophene oligomer.* Adv. Mater., 18(2), 169-174.
- Santato, C., Odziemkowski, M., Ulmann, M. & Augustynski, J. (2001). *Crystallographically oriented mesoporous WO_3 films: synthesis, characterization, and applications.* JACS, 123(43), 10639-10649.