



Dr. Francesca Soavi

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Date of birth: 31st August 1970.

Current position

- Since 2008 Assistant Professor in Inorganic Chemistry at the Department of Chemistry «Giacomo Ciamician», Bologna University – Laboratory of Electrochemistry of Materials.
- 23/12/2013 and 01/12/2014 - National Scientific Qualification to function as Associate Professor in Inorganic Chemistry (CHIM/03)
- 2015-2016 Vice-Chair of Division 3 - Electrochemical Energy Storage and Conversion of The International Society of Electrochemistry

Research skills

Electrochemistry, chemical physical characterization and synthesis of materials (nanostructured and porous carbons, transition metal oxides, electronically conducting polymers, organic electrolytes including room temperature ionic liquids) for energy storage and/or conversions systems (Supercapacitors, Li-ion batteries, Li/O₂ batteries, PEMF fuel cells) for transportation, stationary and portable applications (flexible, thin micro-supercapacitors). Integration of supercapacitors in electronics and energy harvesters for low- and self-powered devices: electrolyte gated transistors/micro-supercapacitor and microbial fuel cells/supercapacitors.

Education and research experience

- 1996 Degree in Chemistry (Bologna University, Single cycle degree/Combined Bachelor and Master)
- 1997 Chemist National qualification (University of Bologna)
- 2002 PhD in Chemical Science with a thesis on "Electrochemistry of materials for energy conversion and storage" (Bologna University).
- 2002 Specialization Degree in "Chemical methods of Control and Analysis" with a thesis on "X-ray diffraction for the analysis of capacity fading of spinel lithium manganese oxide electrodes" (Bologna University).
- 1997-2008, Msc, PhD and Postdoc Fellowships and Research Contracts on "Lithium-polymer batteries for transportation" (by Arcotronics Italia S.p.A.), "Polymer materials for supercapacitors" (Bologna University) and on "Electrochemistry of materials for energy conversion and storage"
- September 2013, April 2014, April-May and October 2015 Visiting Senior Researcher at the Advanced Electroactive Materials Laboratory of the Ecole Polytechnique Montreal (Department of Engineering Physics), Canada under the Researcher Mobility Program, Italian-Canadian cooperation agreement and the Canada-Italy Innovation Award .
- April and October 2015 and May 2016 Visiting Senior researcher at the Chemical & Biological Engineering Department, University of New Mexico, Albuquerque, New Mexico.

Awards

- 2016 Shortlisted for the Final "Emerging Technology Competition" of the Royal Society of Chemistry, London
- 2015 Canada-Italy Innovation Award: "TransCapacitor: a new frontier towards self-sustained and low-power electronics" joint project of the University of Bologna (Italy) and the Ecole Polytechnique Montreal (Quebec)
- 2015 Springer Poster Prize – GEI 2015 "Giornate dell'elettrochimica Italiana" Poster title "An integrated electrolyte gated-transistor/micro-supercapacitor device" by J. Sayago, C. Santato, F. Cicoira, C. Arbizzani, F. Soavi.

Publications –The scientific activity is acknowledged by publications of 68 peer-review papers on international Journals and Proceedings, 7 Book Chapters (on invitation), one encyclopedic entry, 2 patents, and by more than 100 participations in national and international Conference. Total citations: 2900 – h-index: 27

Selected Publications

- 1) G. B. Appetecchi, F. Croce, G. Dautzenberg, M. Mastragostino, F. Ronci, B. Scrosati, F. Soavi, A. Zanelli, F. Alessandrini and P.P. Prosini, Composite polymer electrolytes with improved lithium metal electrode interfacial properties. I. Electrochemical properties of dry PEO-LiX systems, *Journal of The Electrochemical Society*, 145 (1998) 4126-4132.
- 2) C. Arbizzani, M. Mastragostino, F. Soavi, New trends in electrochemical supercapacitors, *Journal of Power Sources*, 100 (2001) 164-170.
- 3) A. Balducci, U. Bardi, S. Caporali, M. Mastragostino, F. Soavi, Ionic liquids for hybrid supercapacitors, *Electrochemistry Communications*, 6 (2004) 566-570.
- 4) I. Ruggeri, C. Arbizzani, F. Soavi*, A novel concept of Semi-solid, Li Redox Flow Air (O₂) Battery: a breakthrough towards high energy and power batteries, *Electrochimica Acta*, 206 (2016) 291-300.
- 5) F. Soavi, L. G. Bettini, P. Piseri, P. Milani, C. Santoro, P. Atanassov, C. Arbizzani, Miniaturized supercapacitors: key materials and structures towards autonomous and sustainable devices and systems, *Journal of Power Sources* 326 (2016) 717-725.

Referee Activities

- Since 2015 Referee for the U.S. Dept. of Energy, Office of Basic Energy Sciences (BES), Materials Science and Engineering Division
- 2014 Expert evaluator/Rapporteur for the European Commission Research Executive Agency
- 2013 Referee for the Netherlands Organisation for Scientific Research (NWO), Council for Chemical Sciences (CW).
- 2012 Referee for the Evaluation of research products on behalf of the Italian Ministry of Education, University and Research and ANVUR (VQR 2004-2010).
- 2009 and 2010 Project evaluator for the Energy Storage program of the French National Research Agency, ANR, STOCK-E "Stockage innovant de l'Energie" - "Innovative energy storage" Program.
- Referee of international Journals with IF

Editorial Activities

- Associate Editor of *Frontiers in Chemistry*

Meeting and School Organization

- 2015 Member of the Organizing Committee of the National Meeting of the Electrochemistry Division of the Italian Chemical Society, Giornate dell'Elettrochimica Italiana (GEI), 20-24/09/2015, Bertinoro.
- 2015 Member of the Organizing Committee of SEC 2015 "Scuola Divisionale di Elettrochimica", Electrochemistry School of the Electrochemistry Division of the Italian Chemical Society, 16-18/09/2015, Bologna.
- 2016 Workshop "Self- and low-power devices", 16/03/2016, Bologna

Teaching Activities

- Since 2003: Aggregate Professor of Courses of General and Inorganic Chemistry for students of the Faculties of Pharmacy, and of Mathematics, Physics, and Natural Sciences and of Pharmacy, and of Didactic of Chemistry For the Faculty of Science of Education Course at the Pharmacy Faculty of Bologna University.
- Since A.A. 2009/2010 - Co-supervisor of the PhD and 2nd level Degree Theses in Chemical Science on materials and systems for energetics and Supervisor of 2nd level Degree and Specialization Theses on Didactic of Chemistry.
- Since 2015 : Co-Supervisor of PhD Theses on "Electrolyte gated transistors" at Polytechnique Montréal, Quebec

Membership of Scientific Societies

Member of The Italian Chemical Society and ENERCHEM, of the International Society of Electrochemistry, of The Electrochemical Society and of INSTM (Consorzio Interuniversitario per la Chimica dei Materiali).