

Professional Curriculum Vitae

Alessandra Sanson

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EDUCATION

- 2000- 2003: **PhD** at School of Industrial and Manufacturing Science, Cranfield University, Cranfield (UK). Project Sponsored by TDK Japan: "Modified Bismuth Titanate Piezoelectric Ceramics".
- 1992- 2000: **Master Degree in Industrial Chemistry (110/110)**, Padua University: "Synthesis by spray drying of a lead free piezoelectric material" in collaboration with ISTECCNR di Faenza.

APPOINTMENTS AND WORK EXPERIENCE

- Current Position: **Senior Researcher CNR** at Institute of Science and Technology for Ceramics (ISTEC); coordinator of the activities on ceramic-based materials and processes for energetics.
- March 2020 **Scientific Rapporteur** of the APRE working "towards Horizon Europe" in the **Cluster 5- Climate, Energy and Mobility**
- July 2019- **CNR representative** in the **Italian network for the development of photovoltaic technologies**
- June 2019 - **CNR representative** in the **Italian Round Table for the Hydrogen Technologies** in the **thematic groups "Generation, storage and Power to gas"** of the Ministry of Economic Development of Italy
- March 2019- **Member and scientific secretary of the Italian NAO (National Associate Organization)** for the **International Union for Pure and Applied Chemistry (IUPAC)**
- May 2019- **Member of the board of professors of the PhD in Molecular Design of the Padua University**
- March 2018- **Representative** of the **CNR Department of Chemical Science and Materials Technologies (DSCTM-CNR)** in the **Chemistry Observatory** of the **Ravenna Province** for the re-qualification of the local chemistry hub. Member of the **Coordination** and **"Innovation Research and Development"** Groups
- February 2017- **Coordinator** of the activities of the **CNR Department of Chemical Science and Materials Technologies (DSCTM-CNR)** in **Mission Innovation**
- February 2017- **Italian Focal Point in Mission Innovation** for the challenge "*Conversion of sunlight to fuels and other forms of chemical energy storage*"
- February 2017- 2021 **Coordinator** of the working groups **"Advanced materials"** and **"Chemistry for renewable energies"** of the **CNR Department of Chemical Science and Materials Technologies (DSCTM-CNR)**
- 2016- 2020 **Member of the MIUR consultancy board** for the Energy Challenge of H2020
- 2016- 2019 **Member of the board of professors of the PhD in Materials Science of the Parma University**
- November 2016- **Member of the CNR Task Force in Mission Innovation** for the challenge "*Conversion of sunlight to fuels and other forms of chemical energy storage*"
- February 2016- **Member of the board** of the Institute of Science and Technology for Ceramics (ISTEC) - CNR.
- 2015- 2017 **Coordinator of the group number two (Decarbonisation Technologies) of the table for the de-carbonisation of Italy**, set by the vicepresident of the Board of Ministries of Italy.
- 2015- 2018 **Coordinator of the Evaluators Panel of CNR experts on "Production and Advanced Manufacturing"** in charge of evaluating the projects on Sustainable Growth of the Ministry of Economic Development of Italy
- 2014- 2018 **Evaluator of projects** on Sustainable Growth of the Ministry of Economic Development of Italy
- 2014- **Member of the Board of Directors** of the Istituto Superiore Industrie Artistiche (ISIA), Faenza, Italy.
- 2012 **Consultants for Nevz-Ceramics** (Russia) on shaping processes for ceramic materials.

- 2011- **ISTEC-CNR Representative and Member of the Steering Committee** in the Energy and Environment Platform of the Emilia Romagna Region.
- 2011- 2017 **CNR representative** in **Airen** (Italian Alliance for the Research on Energy) and in the **Joint Program "Energy Storage"** of **EERA (European Energy research Alliance)**
- 2003 **European Scientific Development Coordinator** for euspen Ltd (European Society for Precision Engineering and Nanotechnology), Cranfield University Park, Cranfield, Bedfordshire, UK.

PROJECT COORDINATION AND PARTICIPATION

- 2020- **Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Frontier Materials for the energy sector" and "High efficiency Photovoltaics"
- 2020 - **PON Project** - Best4you on development of innovative fotovoltaic integrated cell"
- 2016-2019 **ERASMUS+**: Erasmus Mundus Doctoral Programme in Sustainable Industrial Chemistry (**SINCHEM**). coordinator of the ISTEC Unit
- 2015 **Progetto Premiale "Mater"** Innovative materials and Efficient Technologies for Renewables
- 2014 -2016 **2nd Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: Study and development of ceramic membranes for biogas valorisation"
- 2014 -2016 **2nd Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: Electrochemical Systems for Energy generation and storage"
- 2012-2017 **FCH-JU** "Evolved materials and innovative design for high performance, durable and reliable SOFC cell and stack" (**EVOLVE**), European Union's Seventh Framework Program (FP7/2007-2013) for the Fuel Cells and Hydrogen Joint Technology Initiative, grant agreement n° 303429. coordinator of the ISTEC Unit
- 2012 **CNR Project "Progetto Premiale"** "Integrated and eco-sustainable technologies for the production, storage and use of the energy"
- 2012-2015 **FP7-NMP.2012.1.4.2** "Smart nano-structured devices hierarchically assembled by biomineralization processes (**Smiley**)" European Union Seventh Framework Program (FP7/2007-2013), grant agreement n°310637. WP Leader, coordinator of the ISTEC Energy group
- 2012 -2014 **2nd Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: "Study and optimization of ceramic membranes for biomasses valorisationStudio e sviluppo di membrane ceramiche a conduzione mista per la valorizzazione di gas da biomasse (separazione di H₂)"
- 2012-2014 **POR FESR 2007/2013** Piedmont Region "Photovoltaic flexible DSSC based on natural and artificial dyes of new conception (FLEXMAT)".
- 2012 -2014 **2nd Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: Electrochemical Systems for Energy generation and storage"
- 2011 -2012 **1st Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: Non metallic conductors for high temperatures"
- 2011 -2012 **1st Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: Electrochemical Systems for Energy generation and storage"
- 2011 **FISR** Call "Polymeric and Ceramic Fuel Cells: System Dimostration and development of new materials"
- 2010-2016 **Call MISE Industria 2015** "PIACE – Intelligent Integrated and Adaptative Platform for microcogeneration at high efficiency"
- 2010-2013 Asse 1 **POR FESR 2007-2013 Emilia Romagna Region**: Constitution of the DSSC Laboratory
- 2008-2010 MiSE Call "New materials and New Technologies for an internal combustion cogeneration system (MATEC)"
- 2008 -2010 **1st Programme Agreement CNR-MiSE** (ministry of Economic Development of Italy) on "Materials and enabling technologies for the research on the electric systems: " Development of materials for intermediate temperature solid oxide fuel cells"
- 2008-2011 **ENERGY-2007-1.1-03** "Innovative dual membrane fuel cell" (**IDEAL CELL**) European Union's Seventh Framework Program (FP7/2007-2013), grant agreement n° 213389. coordinator of the ISTEC Unit

TEACHING AND TUTORING

- Supervisor of Master and PhD Students of the University of Bologna, Padova and Parma
- Supervisor of Internship of students coming from Chimie ParisTech (France)
- **Invited lecturer** at the first Enerchem School, 20 - 24 February **2018**, Firenze, Italy
- **Invited lecturer** of the International summer school "Mechanics for the green economy" Brescia and Trento, Italy, 19-25 July **2017**
- **2013 Lecturer "Master of second level in Advanced Materials for aerospace applications – PANDION project "**
- **2009- Professor of "Industrial Ceramic Process"** Bachelor course in "Industrial Design with Ceramics and advanced materials", **Third year of the Bachelor course**, at ISIA (Istituto Superiore Industria Artistiche) Faenza (Italy)
- **2007-2017 Lecturer of "Shaping process for ceramics for energetic applications"** PhD in Chemistry of the Università di Bologna (Italy)
- **2005 Lecturer of "Ceramic processes for advanced ceramic"** 11° Scuola AIMAT "Ceramics Materials for functional and structural ceramics" 3 - 7 October **2005** Ischia Porto (NA).

SCIENTIFIC ACTIVITY AND SKILLS

Authors of more than 70 publications in peer-reviewed international journals, 4 book chapters and 3 patents, and more than 100 communications in International congress on Design and engineering of materials and device ceramic-based for energy applications: solid oxide cells (SOFC/SOEC) Photovoltaic cells (DSSC, perovskites), gas separation membranes (Oxygen, hydrogen and CO₂), electrochemical (ZEBRA batteries, supercapacitors) chemical and thermal storage (PCM), Photoelectrochemical cell for solar conversion (PEC), gas sensors, piezoelectric and ferroelectric materials.

Main skills are related on

- ❖ Chemical synthesis of ceramic powders (spray-drying, sol-gel, polyols, hydrothermal) also with non conventional heating source (IR, MW) and nano-colloidal suspensions;
- ❖ Processing techniques for bulk and 3D ceramics: pressing (linear e isostatic), Extrusion, tape and slip casting, screen printing, solid free-form fabrication (gel casting and freeze-drying) microextrusion, ink jet printing;
- ❖ Design and production of thin-thick inorganic-based films and multilayers: evaporation and sputtering, spin- e dip- coating, wet powder spray, ink-jet, microextrusion, EPD, *tape casting screen- stencil-printing*;
- ❖ Production and microstructural characterization of materials (porosimetry, surface area analysis (BET), SEM, permeability, flexural strength, TEM, TG; DTA; DSC, dilatometry ,XRD)
- ❖ Study and optimization of ceramic suspensions and ink (rheology, zeta potential, dynamic light scattering);
- ❖ Spectroscopic analysis: ICP-OES, UV-visible, IR, atomic absorption;
- ❖ Electrochemical and functional PV, piezoelectric characterizations (cyclic and linear voltammetry, impedance spectroscopy, i-v curves and quantum efficiency, piezoelectric-ferroelectric parameters).

VARIOUS

1. **Member of the Scientific Committee** of "XII Convegno Nazionale INSTM and XV Convegno Nazionale AIMAT" 21-24 July 2019, Ischia (NA) Italy
2. **Organizer and Chair** workshop "challenges and opportunity of research in micro-gravity" in collaboration con Nanoracks LtD, 26-09-2019 Roma, Italy
3. **Organizer** Meeting CNR- BP, 14 July 2018, Roma (Italy)
4. **Co-organizer and chair** workshop "Advanced nanomaterials for cultural heritage" in Nanoinnovation 2018, 27 Settembre 2018, Roma, (Italy)
5. **Member of the Scientific Committee** of "Materials.it" 22-26/10/2018 Bologna, Italy
6. **Founding Member** of the **Italian Chapter of the American Ceramic Society (2017-)**
7. **Chair** of the International workshop "Ceramics for Energy, CEn 2017" organized by ISTECCNR, co-chair: Dr. Maurizio Peruzzini, 7-9 Giugno **2017**, Museo Internazionale delle Ceramiche, Faenza (RA).
8. **Chair** of the International Workshop "Ceramics for Energy, CEn 2015" organized by ISTECCNR, co-chair: Dr. Maurizio Peruzzini, 14-15 Maggio **2015**, Museo Internazionale delle Ceramiche, Faenza (RA).

9. **Guest Editor** Journal of the European Ceramic Society for the volume "Ceramics for Energy", 2017
10. **External Examiner PhD Course** in Material Science, Department of Energy Convesion and Storage, **DTU (Denmark) 2018-2019**
11. **External Examiner PhD Course** in Materials, Mechatronics and Systems Engineering, **University of Trento (Italy) 2018-2019**
12. **External Examiner PhD Course** in Material Science, DISAT, **Turin Politechnic University (ITALY) 2018-2020**

Faenza 20/01/2020

Alessandra Sanson

A handwritten signature in black ink, appearing to read 'Alessandra Sanson', with a long horizontal stroke extending to the right.