

## **Prof. Francesco NOBILI**

Full-time Associate Professor in Chemistry  
School of Science and Technology (SST), Chemistry Division  
University of Camerino  
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### **Education**

PhD in Chemical Sciences - University of Camerino, 2002. Thesis "Preparation and electrochemical characterization of cathodes for Li-ion batteries based on Lithium, Nickel, Cobalt mixed oxides".  
Laurea (MSc) in Chemistry – University of Camerino, 1997. Thesis "Use of heptahydrate Ce(III) Chloride for chemoselective regeneration of carbonilic compounds from dioxolanes".

### **Employment History**

2020-current Associate Professor, SSD CHIM/02 University of Camerino  
2008-2019 Full-time Researcher, SSD CHIM/01 University of Camerino  
2005-2008 Contract Researcher, SSD CHIM/01 University of Camerino  
2002-2005 Post-Doc Grant University of Camerino

### **Research activity**

The research activity of Prof. Francesco Nobili concerns the synthesis and the physico-chemical and electrochemical characterization of active materials for electrochemical energy storage and conversion devices, such as Li-ion batteries (LIBs), Na-ion batteries (NIBs), polymer electrolyte membrane Fuel Cells (PEM-FCs), Solid Oxide Fuel Cells (SOFCs). The activities mainly regard:  
Synthesis of anode materials for LIBs and NIBs: carbonaceous materials, titanates, alloying materials, conversion materials, sustainable nanocomposite materials;  
Synthesis of cathode materials: mixed oxides of Li and Ni/Co/Mn/Zr/Mn, olivines;  
Development of green electrode formulations;  
Development of low-Pt-content electrodes for PEM-FCs;  
Physico-chemical characterization techniques: scanning electron microscopy (SEM); X-ray diffraction (XRD); thermogravimetric analysis (TGA); Raman spectroscopy;  
Potential- and Current-controlled electrochemical characterization techniques;  
Electrochemical impedance spectroscopy (EIS);  
Characterization of electrode/electrolyte interfaces;  
Development and application of ex-situ and in-operando analytical methodologies.  
Diagnostic tools for monitoring SOH of LIBs, NIBs, SOFCs.  
Research periods abroad:  
2002 (May-July) at "Laboratoire de Chimie du Solide Minéral" of Nancy University (France) supervisor prof. D. Guerard;  
2005 (July-September) at Chemistry Department of Stony Brook University in Stony Brook, NY (USA) supervisors prof. C. Gray and Prof. S. Greenbaum;  
2008 (January-March) at Physics Department of Hunter College of CUNY University in New York City, NY (USA) supervisor prof. S. Greenbaum.  
F. Nobili is coordinator of the Unicam Research Framework "Sustainable and smart energy development" and member of the Board of GISEL@INSTM Network (Italian Group for Electrochemical Storage @ National Institute for Science and Technology of Materials)

### **Bibliometric data**

Publications = 78, Book chapters = 3, h-index = 29, total citations = 2325.

### **Institutional responsibilities**

2017-current Rector's Delegate for Stage e Placement Activities at University of Camerino

2015-current Coordinator of the Research Framework "Sustainable and smart energy development" at University of Camerino

### **Teaching activities**

2008-current Classes of Analytical Chemistry and Physical Chemistry;

2011-current Supervision of 13 Graduate Students in the PhD Course in Chemical Sciences;

### **Recently funded projects**

2022-2023 "Evaluation of Mirka made components for Super capacitors and Anode carbons".  
Funded by MIRA srl.

2021-2022 "Study of methodologies for quick assessment of MEAs and PEMFCs in non-ATEX environment". Funded by AEA srl.

2020-2022 "Protocols for characterization of Li batteries. Development of innovative materials. Reuse and recycle strategies of Li-ion batteries". Funded by MIDAC company.

2019-2021 "Anode materials for Na/Li batteries". Funded by ENEA (National Agency for new technologies, energy and sustainable economic development) and MISE (Italian Ministry of Economic Development). Coordinator of local research unit.

2018 "Nanocomposite electrodes for Li-ion and Na-ion batteries. Preliminary investigations on structural and interfacial stability". Funded by ENEA and MISE. Coordinator of local research units.

2017-2018 "Synthesis and characterization of nanocomposite anodes based on Si, Sn, C". Funded by ENEA and MISE. Coordinator of local research unit.

2016-2017 "Synthesis and characterization of composite anodes based on conversion materials for Li and Na". Funded by ENEA and MISE. Coordinator of local research unit.