



Graziano Di Donato

About me:

Graziano Di Donato received his MSc Degree in Industrial Chemistry at Sapienza University of Rome. During his academic career he approached the field of electrochemical energy storage. Actually he is enrolled as PhD Student in Chemical Sciences. His current research interests solid state batteries, focusing especially on lithium sulfur technology and on Seawater Batteries.

● WORK EXPERIENCE

08/2020 – 11/2020 – Rome, Italy

RESEARCHER – SAPIENZA UNIVERSITY OF ROME

Research Grant at Department of Chemistry for the study of solid-state batteries

02/2018 – 12/2018 – Rome, Italy

COLLABORATOR – SAPIENZA UNIVERSITY OF ROME

Collaboration Grant at Department of Chemistry

● EDUCATION AND TRAINING

11/2020 – CURRENT

PHD IN CHEMICAL SCIENCES – Sapienza University of Rome

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry*

Thesis: Hybrid electrolytes and novel composites cathodes for all-solid-state lithium sulfur batteries

EQF level 8

02/2022 – CURRENT – Ulm, Germany

VISITING PHD STUDENT – Helmutz Insitute Ulm

10/2019 – 01/2021 Industrial Chemistry, Curriculum: Environment, Resources, Energy and Safety

MASTER DEGREE – Sapienza University of Rome

I worked in the "Electrochemistry and Nanotechnology for Advanced Materials" (ENAM) group. The group activities concern the preparation and characterization of nanostructured innovative materials and electrolytes to be used as electrode materials and electrolytes for lithium ion batteries and fuel cells. In particular, my work was about the preparation and characterization of an electrolyte system with an innovative ionic liquid and the evaluation of its electrochemical performances in different Li/C electrodes systems.

Skills acquired:

- Electrodes preparation (cathodes and anodes).
- Setup and data analysis of voltammetric techniques (cyclic voltammetry, linear sweep voltammetry, stripping voltammetry).
- Setup and data analysis of electrochemical impedance spectroscopy.

- Setup and data analysis of controlled-current techniques (galvanostatic cycling, GITT).
- Fundamentals in synthesis and characterization of ionic liquids.
- Materials characterization (SEM, FTIR, Raman, XRD).

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry*

Thesis: Study of carbonaceous anode materials and innovative electrolytes for lithium ion batteries (ITA)

110/110 cum laude | EQF level 8

10/2012 – 01/2016 Industrial Chemistry

BACHELOR DEGREE – Sapienza University of Rome

The goal of the research was the development of an innovative bio-elettrochemical system to remediation of groundwater contaminated by chlorinated solvents through a bio-elettrochimical continuous reactor able to pair a first cathodic reduction for most-chlorinated compounds with a second anodic oxidation for less-chlorinated compounds from the cathodic section.

Skills acquired:

- Setup of Gas chromatography (FID and TCD) and analysis of data.
- Setup of Ionic chromatography and analysis of data.
- Fundamentals of the management of a continuous reactor.
- Control and management of the electrochemical parameters.

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry*

Thesis: Remediation of groundwater contaminated with 1,1,2,2-Tetrachloroethane by bio-electrochemical process (ITA)

109/110 | EQF level 6

● **LANGUAGE SKILLS**

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	C1	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **DIGITAL SKILLS**

My Digital Skills

Safety: Proficient User | Microsoft Office: Proficient User | JMP (Design of Experiment): Independent User | Origin Pro: Proficient User at data processing | PC Management: Proficient User | Website Development: Intermediate User

Management/organisational skills

Methodical | Dynamic, proactive, responsible | Team-Working

Professional Skills

Applied Electrochemistry | Lithium-ion Batteries | Lithium-Sulfur Batteries | Material Characterization | Batteries | Different electrochemistry techniques

● PUBLICATIONS

Electrolyte Measures to Prevent Polysulfide Shuttle in Lithium-Sulfur Batteries

<https://doi.org/10.1002/batt.202200097> – 2022

Lithium-sulfur (Li-S) batteries are recognized as one of the most promising technologies with the potential to become the next-generation batteries. However, to ensure Li-S batteries reach commercialization, complex challenges remain, among which the tailoring of an appropriate electrolyte is the most important. This review discusses the role of electrolytes in Li-S batteries, focusing on the main issues and solutions for the shuttle mechanism of polysulfides and the instability of the interface with lithium metal. Herein, we present a background on Li-S chemistry followed by the state-of-the-art electrolytes highlighting the different strategies undertaken with liquid and solid electrolytes.

● CONFERENCES AND SEMINARS

04/02/2021 – 04/02/2021 – University of Camerino (ONLINE)

Symposium in honor of Prof. Roberto Marassi - Bridging two centuries of electrochemical energy storage and conversion

Oral Communication - "Carbonaceous Materials and Innovative electrolytes for lithium batteries"

29/08/2021 – 03/09/2021 – International Society of Electrochemistry, Jeju Island – Korea (ONLINE)

72nd Annual Meeting of International Society of Electrochemistry

Poster - "Safe Ionic Liquid-based Electrolytes Coupled with Carbonaceous Anodic Materials for Lithium-Ion Batteries"

28/06/2021 – 01/07/2021 – Fraunhofer Institute of Dresden (ONLINE)

2nd International Conference on Lithium Sulfur Batteries
