

Arcangelo Celeste

Curriculum Vitae

Place: Rome
Date: 02/02/2023

Part I – General Information

Full Name	Arcangelo Celeste
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Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
University graduation	2015	Università degli Studi della Basilicata	Bachelor's Degree in Chemistry 101/110
University graduation	2017	Università degli Studi della Basilicata	Master's Degree in Chemical Sciences 110/110 cum Laude
PhD	2022	Università degli Studi di Genova	PhD in Sciences and Technologies of Chemistry and Materials

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
01/11/2021	31/10/2022	Sapienza Università di Roma	Assegnista di Ricerca
01/12/2022	-	Sapienza Università di Roma	Assegnista di Ricerca

IIIB – Other Appointments

Start	End	Institution	Position
16/01/2018	15/10/2018	Fondazione Istituto Italiano di Tecnologia	Borsista
02/09/2019	31/10/2021	Enea C. R. Casaccia	Visiting PhD student
01/11/2020	31/03/2021	Uppsala University	Visiting PhD student
01/11/2021	31/10/2022	Enea C. R. Casaccia	Visiting Post doc fellow
01/12/2022	-	Enea C. R. Casaccia	Visiting Post doc fellow

Part IV - Society memberships, Awards and Honors

Year	Title
2022	Giovanni Semerano Award, awarded by Società Chimica Italiana
2023	Student and Young Professional Travel Grant, awarded by ACerS The Engineering

	Ceramics Division
2019-2020-2022	Società Chimica Italiana- Divisione di Chimica Fisica

Part V – International School

Year	Title
2018	MAUD 2018 – Materials Characterisation by the Combined Analysis
2019	ISEE 2019 – International Spring School of Electrochemistry

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value	Details
2020	Irreversible DEgradation of energy MAterials: from elementary reactions to mitigation strategies (IDEMA)	Progetto Ateneo (Medio, bando 2020)- Sapienza	38000 EUR	Investigator
2022	Synthesis and structural characterization of anion doped Lithium Rich Layered Oxides	Progetti Sapienza per Avvio alla Ricerca Tipo 2	2000 EUR	Principal Investigator
2022	BAattery Health-state: Aging, Models and AbuSe (BAHAMAS)	Progetti di Ricerca (Piccoli, Medi) - Progetti Medi- Sapienza	37000 EUR	Investigator

Part VII – Large Scale Facilities participation

Year	Proposal	Facility
2020	Ex-situ diffraction analysis of the electrochemical process of Li-rich Al-doped transition metal layered oxide in lithium cells.	MCX beamline – Elettra
2022	Crystal phase evolution and Solid-Electrolyte Interface in microbatteries containing a TiO ₂ negative electrode.	SMIS beamline – Soleil

Part VIII – Research Activities

Keywords	Brief Description
Solid State Chemistry	My research activity focuses on the study of the synthesis, structure and properties of solid materials with a particular attention to materials for energy storage application. The PhD and the postdoc experiences have allowed me to explore many synthetic, physical-chemical and electrochemical techniques. My expertise include advance inorganic synthetic methods, for example Sol-Gel, Self-Combustion and Solvothermal process, and chemical and physical characterization, mainly in terms of structure and morphology (X-Ray Diffraction, Rietveld Refinement routines, Raman and Infrared Spectroscopy, Scanning Electron Microscopy, Transmission Electron Microscopy...). I have also exploited electrochemical techniques to investigate materials
Layered Oxides Materials	
X-Ray Diffraction	
Lithium- and Post Lithium-Ion Batteries	
Electrochemistry	

electrochemical properties in the storage devices. The characterization concerns: i) Galvanostatic and Voltametric methods, Electrochemical Impedance Spectroscopy; ii) in operando methods using diffraction and spectroscopic techniques; iii) postmortem analysis on ex-situ samples.

Part IX – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	9	Scopus	2020	2023

Total Impact factor	50.57
Total Citations	22
Average Citations per Product	2.44
Hirsch (H) index	3
Normalized H index*	0.75

*H index divided by the academic seniority.

Part X – Patents

Year	Number Application	Title
2020	Italian Patent Application N. IT 102020000016966	Materiale di ossidi di metalli di transizione ricco di litio
2021	PCT International Application N. PCT/IB2021/056279 (International Application of the corresponding Italian paten)	Li-Rich Transition Metal Oxides Material

Part XI – Selected Publications

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

- 1) A. Celeste, L. Silvestri*, M. Agostini, M. Sadd, S. Palumbo, J.K. Panda, A. Matic, V. Pellegrini, S. Brutti*, Enhancement of Functional Properties of Liquid Electrolytes for Lithium-Ion Batteries by Addition of Pyrrolidinium-Based Ionic Liquids with Long Alkyl-Chains, *Batter Supercaps.* 3.10 (2020) 1059–1068. <https://doi.org/10.1002/batt.202000070>. IF:7.093 Citations:5
- 2) A. Celeste, M. Tuccillo, A. Santoni, P. Reale, S. Brutti*, L. Silvestri*, Exploring a Co-Free, Li-Rich Layered Oxide with Low Content of Nickel as a Positive Electrode for Li-Ion Battery, *ACS Appl Energy Mater.* 4.10 (2021) 11290–11297. <https://doi.org/10.1021/acsaem.1c02133>. IF: 6.959 Citations:8
- 3) A. Celeste, R. Brescia, G. Greco, P. Torelli, S. Mauri, L. Silvestri, V. Pellegrini, S. Brutti*, Pushing Stoichiometries of Lithium-Rich Layered Oxides Beyond Their Limits, *ACS Appl Energy Mater.* 5.2 (2022) 1905–1913. <https://doi.org/10.1021/acsaem.1c03396>. IF: 6.959 Citations:3

- 4) M. Tuccillo, A. Costantini, A. Celeste, A.B.M. García, M. Pavone, A. Paolone, O. Palumbo, S. Brutti*, NAl/Li Antisite Defects in the $\text{Li}_{1.2}\text{Ni}_{0.2}\text{Mn}_{0.6}\text{O}_2$ Li-Rich Layered Oxide: A DFT Study, Crystals (Basel). 12.5 (2022) 723. <https://doi.org/10.3390/cryst12050723>. IF:2.67 Citations:1
- 5) M. Palluzzi, L. Silvestri, A. Celeste, M. Tuccillo, A. Latini, S. Brutti*, Structural Degradation of O3-NaMnO2 Positive Electrodes in Sodium-Ion Batteries, Crystals (Basel). 12.7 (2022) 885. <https://doi.org/10.3390/cryst12070885>. IF:2.67 Citations:1
- 6) A. Celeste, F. Girardi, L. Gigli, V. Pellegrini, L. Silvestri, S. Brutti*, Impact of Overlithiation and Al doping on the battery performance of Li-rich layered oxide materials, Electrochim Acta. 428 (2022) 140737. <https://doi.org/10.1016/j.electacta.2022.140737>. IF:7.336 Citations:4
- 7) A. Celeste*, R. Brescia, L. Gigli, J. Plaisier, V. Pellegrini, L. Silvestri, S. Brutti*, Unravelling structural changes of the $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ lattice upon cycling in lithium cell, Materials Today Sustainability. 21 (2023) 100277. <https://doi.org/10.1016/j.mtsust.2022.100277>. IF: 7.244
- 8) A. Celeste*, M. Paolacci, P.G. Schiavi, S. Brutti, M.A. Navarra, L. Silvestri*, Understanding the Impact of Fe-Doping on the Structure and Battery Performance of a Co-Free Li-Rich Layered Cathodes, ChemElectroChem. (2023). <https://doi.org/10.1002/celec.202201072>. IF:4.782
- 9) A. Laezza*, A. Celeste, M. Curcio, R. Teghil, A. de Bonis, S. Brutti, A. Pepe, B. Bochicchio, Cellulose Nanocrystals as Additives in Electrospun Biocompatible Separators for Aprotic Lithium-Ion Batteries, ACS Appl Polym Mater. (2023). <https://doi.org/10.1021/acsapm.2c01956>. IF: 4.855
- 10) L. Silvestri, A. Celeste, M. Tuccillo, S. Brutti*, Li-rich Layered Oxides: Structure and Doping Strategies to Enable Co-Poor/Co-Free Cathodes for Li-Ion Batteries, Crystals. 13.2 (2023) 204. <https://doi.org/10.3390/cryst13020204>. IF: 2.67
- 11) A. Celeste, Design and characterization of doped Lithium Rich Layered Oxides for Lithium Ion Battery, PhD thesis. (2022). <https://hdl.handle.net/11567/1073365>.

Part XII – Conferences

Poster Contributions

Title	Conference	Place and date
Ionic liquids based electrolytes for advanced cathode materials	Merck & Elsevier Young Chemists Symposium	Rimini, November 19-21 2018

Oral Contributions

Title	Conference	Place and date
Lithium rich transition metal oxides as high capacity positive electrode materials in Li-ion cells	Giornate dell'elettrochimica Italiana 2019	Padova, September 8-12 2019
Lithium-Rich layered oxides as a positive materials for Lithium-Ion Batteries	NanoInnovation 2020	September 15-18 2020
Investigation of the effect of Li- and Al- doping on electrochemical properties of Li-rich layered oxides	NanoInnovation 2021	Roma, September 21-24 2021
Lithium Rich Layered Oxides as cathode materials for Lithium Ion Batteries	First Symposium for YouNg Chemists: Innovation and Sustainability (SYNC)	Roma, June 20-23 2022
Investigation of the effect of Li- and Al- co-doping on	XLVIII National Congress of	Genova, July 04-07

electrochemical properties of Li-rich layered oxides	Physical Chemistry	2022
Investigation of the effect of iron doping on electrochemical properties of Li-rich transition metal oxides	Giornate dell'elettrochimica Italiana 2022	September 11-15 2022
Structure and Doping of Lithium Rich Layered Oxides as a cathode material for Lithium Ion Batteries	47th International Conference and Expo on Advanced Ceramics and Composites (ICACC2023)	Daytona Beach January 22-27 2023