

SERGIO BRUTTI – curriculum vitae

Part I – General Information

Full Name	Sergio Brutti
Spoken Languages	Italian; English

Part II – Education

Type	Year	Institution	Notes (degree, experience, ...)
University Graduation	2000	Università di Roma La Sapienza	Laurea in Chimica, ordinamento quinquennale, obtained in 5 years (legal expected duration), final mark 110/110 e lode
PhD	2004	Università di Roma La Sapienza	Dottorato in Scienze Chimiche

Part IIIa – Academic Appointments

Start	End	Institution	Position
May 2003	June 2003	University of Tokyo (Japan)	Visiting Scientist (during PhD) – 2 months
Nov 2003	Oct 2004	Università di Roma La Sapienza	Junior Post-doc (co.co.co) – 12 months
Nov 2004	May 2005	University of Oxford (UK)	Visiting Scientist Fellowship funded by the University of Rome La Sapienza - 7 months
July 2005	Oct 2005	Università di Roma Tre	Junior Post-doc (co.co.co) – 4 months
June 2006	Jan 2007	Università di Roma Tre	Senior Post-doc (assegno di ricerca) – 8 months
Feb 2007	Jan 2009	Università di Roma La Sapienza	Senior Post-doc (assegno di ricerca) – 24 months
Feb 2009	June 2009	University of Thessaloniki (Greece)	Senior Post-doc (fellowship) – 5 months
July 2009	June 2011	Università di Roma La Sapienza	Senior Post-doc (borsa di studio post-doc) – 24 months (shared position with the - University of St Andrew-UK)
July 2011	Dec 2011	Università di Roma La Sapienza	Senior Post-doc (assegno di ricerca) – 6 months
Dec 2011	Dec 2014	Università della Basilicata	Permanent Researcher (ricercatore a tempo indeterminato) non confermato - 36 months
Dec 2014	Dec.2018	Università della Basilicata	Permanent Researcher (ricercatore a tempo indeterminato) confermato – 48 months
Dec.2018	Current position	Università di Roma La Sapienza	Permanent Researcher (ricercatore a tempo indeterminato) confermato – 13 months

Part IIIb – Other Appointments

Year	Appointment
2012	Member of the PhD board: Università degli Studi della BASILICATA; Title: "SCIENZE CHIMICHE/CHEMICAL SCIENCES" Starting academic year: 2012 - Cycle: XXVIII
2013	Member of the PhD board: Università degli Studi della BASILICATA; Title: "SCIENZE" Starting academic year: 2013 - Cycle: XXIX
2016-2017	Member of the PhD board: Università degli Studi di SALERNO (consorzio con l'Università della Basilicata) Titolo: "CHIMICA" Starting academic year: 2016/17 - Cycle: XXXII Starting academic year: 2017/18 – Cycle XXXIII
Feb. 2015	Member of the Italian National PhD Evaluation Committee: Università degli Studi di Verona; Title: “Nanotecnologie e nanomateriali per applicazioni” afferente alla scuola di dottorato di scienze ingegneria medicina, a.y. 2015
Dec. 2015	Member of the Italian National PhD Evaluation Committee: Università degli Studi della CALABRIA; Title: “Scienza e tecnica – Bernardino Telesio” Indirizzo: “Mesofasi e Materiali Molecolari” Cycle XVIII
May- June 2015	Invited Professor: Université d'Evry Val d'Essonne (France); Local Contact: Riccardo Spezia; LAMBE-CNRS
May-June 2017	Visiting Researcher: Chalmers University of Technology; Local Contact: Prof. Aleksandar Matic; Head of Division Condensed Matter Physics
2012-2013-2014	Referee(valutatore) for the Ministero dell'Istruzione dell'Università e della Ricerca (MIUR – Italian Administration) in the frame of the calls: PRIN 2012; FIRB 2013; SIR 2014.
2016	Referee of the Irish Research Council in the frame of the Ireland Postdoctoral Fellowship Scheme 2016.
2016-2017	Reviewer of the Austrian Science Fund (FWF) in the frame of the Erwing Schrodinger Grant calls 2016-2017
2016-2017	Quality Control Manager (Responsabile Assicurazione della Qualità) of the Dept. Science, University of Basilicata
Dec 2014	Abilitazione Scientifica Nazionale 03/A2 (Modelli e Metodologie per le Scienze Chimiche) – seconda fascia
Apr 2017	Abilitazione Scientifica Nazionale 03/A2 (Modelli e Metodologie per le Scienze Chimiche) – prima fascia
Apr 2017	Abilitazione Scientifica Nazionale 03/B1 (Fondamenti delle Scienze Chimiche e sistemi inorganici) – seconda fascia
Apr 2017	Abilitazione Scientifica Nazionale 03/A2 (Fondamenti chimici delle tecnologie) – seconda fascia
Nov 2017	Abilitazione Scientifica Nazionale 03/B1 (Fondamenti delle Scienze Chimiche e sistemi inorganici) – prima fascia

Part IV – Teaching Experience

Academic Year	Semester	Institution	Lecture/Course
2011/2012	II	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2011/2012	II	Università della Basilicata	Didattica e Laboratorio di Chimica Fisica (2 CFU) ⁽²⁾
2012/2013	II	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2013/2014	I	Università della Basilicata	Advanced Physical Chemistry, 1 st module (5 CFU) ⁽³⁾
2013/2014	II	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2014/2015	I	Università della Basilicata	Advanced Physical Chemistry, 1 st module (5 CFU) ⁽³⁾
2014/2015	II	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2015/2016	I	Università della Basilicata	Physical Chemistry of Materials (6 CFU) ⁽³⁾
2015/2016	II	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2016/2017	I	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2016/2017	II	Università della Basilicata	Physical Chemistry of Materials (6 CFU) ⁽³⁾
2017/2018	I	Università della Basilicata	Informatics for Chemistry (5 CFU) ⁽¹⁾
2017/2018	I	Università della Basilicata	Physical Chemistry of Materials (6 CFU) ⁽³⁾
2018/2019	I	Università di Roma La Sapienza	General and Inorganic Chemistry (0 CFU) ⁽⁴⁾
2019/2020	I	Università di Roma La Sapienza	General and Inorganic Chemistry (6 CFU) ⁽⁵⁾
2019/2020	I	Università di Roma La Sapienza	General and Inorganic Chemistry (6 CFU) ⁽⁶⁾
2019/2020	I	Università di Roma La Sapienza	Physical Chemistry 1 (1 CFU) ⁽⁷⁾

⁽¹⁾ Affidamento Didattico/titolare del corso, Corso di Laurea Triennale in Chimica, tipologia di corso a.a.: altre attività non attribuite a nessun SSD;

⁽²⁾ Affidamento Didattico/titolare del corso, Corso di Tirocinio Formativo Attivo (TFA) classe A013, SSD CHIM/02;

⁽³⁾ Affidamento Didattico/titolare del corso, Corso di Laurea Magistrale in Scienze Chimiche, SSD CHIM/02;

⁽⁴⁾ Presidente della Commissione d'Esame, Corso di Laurea Triennale in Scienze Biologiche, SSD CHIM/03

⁽⁵⁾ Affidamento Didattico/titolare del corso, Corso di Laurea Triennale in Scienze Biologiche, SSD CHIM/03

⁽⁶⁾ Affidamento Didattico/titolare del corso, Corso di Laurea Triennale in Scienze Naturali, SSD CHIM/03

⁽⁷⁾ Affidamento Didattico, Corso di Laurea Triennale in Scienze Chimiche, SSD CHIM/02

Part V – Society memberships, awards and honors

Year	Title
2004-2020	Member of the Italian Society of Chemistry (SCI) From January 2016 to December 2018 member elect of the “Board of the Basilicata Section” From January 2019 to December 2021 member elect of the “Board of the Physical Chemistry Division”
2010-2018	Member of the American Chemical Society (ACS)
2012-2020	Member of the Electrochemical Society (ECS)
2019-2020	Member of the INSTM consortium
2014-2020	Member of the International Society of Electrochemical (ISE)
2012-2020	Research Associate (B) of the Istituto dei Sistemi Complessi – Consiglio Nazionale delle Ricerche (ISC-CNR)
2017	Finanziamento alla ricerca di base riservato ai ricercatori universitari e professori associati universitari - FFARB – MIUR
2010	Premio Ordine dei Chimici-Luam per il miglior poster in Chimica Fisica – Convegno Giovani Chimici, Università di Roma La Sapienza, 16-17 luglio 2010
2010	Premio della Società Chimica Italiana “I giovani e la chimica 2010”

Part VIa - Funding Information [grants as PI-principal investigator / I-investigator] 2012-2013

Year	Title	Program	Grant Value	Details
2012	Idruri quali anodi ad alta capacità per batterie litio ione	FIRB Futuro in Ricerca 2010 (60 months)	418 000 Euro (budget CNR-ISC unit)	Principal investigator (PI) of the CNR-ISC unit
2013	Membrane nanocomposite avanzate ed elettrocatalizzatori innovativi per celle a combustibile ad elettrolita polimerico	PRIN 2010-2011 (36 months)	130 000 Euro (budget Univr unit)	Investigator (I) in the Univr unit
2013	SmartBasilicata	Smart Cities and Communities - PON “R&C” 2007-2013 (60 months)	40 000 Euro (budget of the OR2.3.5 sub-activity)	Investigator (I) in the OR2.3.5 subactivity unit
2012	Materiali per Batterie Li-ione	Ricerca di Interesse Locale (RIL 2012) Università della Basilicata	2 000 Euro	Principal investigator (PI)
2013	Materiali innovativi per Batterie Li-ione	Ricerca di Interesse Locale (RIL 2013) Università della Basilicata	3 000 Euro	Principal investigator (PI)
2013	Synthesis of a composite material based onLiCoPO ₄ and its application innovative secondary lithium cells	Area Science Park/Basilicata Innovazione (20 months)	56 000 Euro	Principal investigator (PI)

Part VIb - Funding Information [grants as PI-principal investigator / I-investigator] 2014-2020

Year	Title	Program	Grant Value	Details
2014	Performances and failure analysis of a Na-ion cell	Area Science Park/Basilicata Innovazione (14 months)	20 000 Euro	Principal investigator (PI)
2015	Materiali innovativi per Batterie Li-aria”	Ricerca di Interesse Locale (RIL 2015) Università della Basilicata	3 500 Euro	Principal investigator (PI)
2015	Assessment of the conditioning cycle of a Na-ion cell	Area Science Park/Basilicata Innovazione (2 months)	10 000 Euro	Principal investigator (PI)
2015	Characterization of full Li-ion cells and analysis of via-gas phase degradation mechanisms	SAES Getters Spa – Research Contract (19 months)	45 000 Euro	Principal investigator (PI)
2017	Contratto di prestazione attività di formazione	SAES Getters Spa (6 months)	3 300 Euro	Principal investigator (PI)
2017	PAR2017 “Metallic lithium as negative electrode material for secondary Li-ion and post-lithium batteries”	ENEA-MISE (12 months)	15 000 Euro	Principal investigator (PI)
2018	Contratto di prestazione attività di formazione	SAES Getters Spa (6 months)	3 300 Euro	Principal investigator (PI)
2018	PAR2018 “Artificial SEI-layer on lithium electrodes”	ENEA-MISE (3 months)	16 000 Euro	Principal investigator (PI)
2019	H2020 “ Si-DRIVE”	European Union (39 months)	350 000 Euro (budget of the CNR unit)	Investigator (I) in the CNR unit
2019	Confined nanometals: strUcture and properties of alkali meTals in mEsopores (CUTE)	University of Rome La Sapienza – Progetti Ateneo (Medi)	14 000 Euro	Investigator (I)
2019	An FTIR-Microscopy integrated system for chemical imaging resolved in time (microFTIR)	University of Rome La Sapienza – Medie Attrezzature	62 000 Euro	Principal investigator (PI)

Part VIc – Other Research Grants or Research Agreements as PI (without budget)

Year	Title	Granting Institution and program	Resources
2007	Electronic and dynamic properties of MgB ₂ and related composition-modulated superstructures	Casपुर Consortium - Bando B 2007	Computational Resources
2009	DFT modelling of metallic nanoparticles for lithium intercalation	Casपुर Consortium - Standard HPC 2009	Computational Resources
2010	Thermodynamic modelling by first principles calculation of metallic substitution in TiO ₂	Casपुर Consortium - Standard HPC Grant 2010	Computational Resources
2012	First principles study of metallic and hydride-based clusters	CINECA - ISCRA class C projects	Computational Resources
2013	Diffraction study of the self-discharge phenomena of LiCoPO ₄ in rechargeable lithium cells	MCX beamline – Elettra synchrotron	Beamtime; project number 20130017
2014	In situ diffraction study of the HCR of NaAlH ₄ in lithium cells	MCX beamline – Elettra synchrotron	Beamtime; project number 20140458
2015	In situ diffraction study of sodium alanates in lithium cells	MCX beamline – Elettra synchrotron	Beamtime; project number 20150410
2017	Electrochemical lithium de-intercalation/intercalation in Li(Co _{1/3} Fe _{1/3} Mn _{1/3})PO ₄ cathodes by ex-situ XRD	MCX beamline – Elettra synchrotron	Beamtime; project number 20165060
2017	Investigation on Cr ³⁺ doped NiCo ₂ O ₄ @Ni foam cathodes for Li-O ₂ cells by ex-situ and in-situ XRD	MCX beamline – Elettra synchrotron	Beamtime; project number 20170198
2018	Pathways to singlet oxygen release in aprotic Li-O ₂ environments	CINECA ISCRA class C projects	Computational Resources
2019	Modeling disorder in layered oxides for Lithium batteries	CINECA ISCRA class C projects	Computational Resources
2020	In operando analysis of the structural degradation of LMNO spinel positive electrodes in Li-ion batteries	CERIC – Elettra Synchrotron	Beamtime (MCX & XAFS); project number 20197001

Part VII – Research Activities

Keywords	Brief description
Reaction Thermodynamics Energy Storage Materials Crystal Chemistry Advanced Materials X-ray diffraction Computational thermodynamics	<p>My research interests fall in the field of solid-state chemistry and thermodynamics with the final aim to develop knowledge-based advanced materials for advanced technological applications. In particular my research approach integrates vertically the investigation of materials for energy applications exploiting a variety of techniques and strategies:</p> <p>(a) advanced inorganic synthesis and physical-chemistry experimental characterization of the materials structural, thermodynamic and morphological properties (X-ray diffraction, scanning electron microscopy, transmission electron microscopy, atomic force microscopy, Raman spectroscopy, infrared spectroscopy, X-ray photoemission spectroscopy, X-ray absorption spectroscopies; Nitrogen adsorption; thermal analysis);</p> <p>(b) functional characterization of materials (and processes) in energy storage devices (electrochemical techniques; in operando electrochemical/spectroscopic or electrochemical/diffraction investigation; ex situ investigation on post mortem materials, internal pressure investigation in electrochemical cells) at lab-scale or beyond (Li- and Na-batteries, Li-O₂ batteries, supercapacitors; micro-batteries);</p> <p>(c) computational modelling by density functional theory (DFT) of solids to derive phase stabilities and transformations in high temperature and energy storage materials;</p> <p>(d) computational modelling by DFT or hybrid-DFT of molecules in gas phase or simulated solvents to derive thermodynamic stabilities and to predict the reactivity of organic solvents and salts for non-aqueous electrolytes in electrochemical devices.</p>

Part VIII – Summary of Scientific Achievements

Product type	Number	Database	Start	End
Papers (international) ISI (total)	94	Scopus & (*)	2001	2020
Papers (international) ISI (last 10 years)	66	Scopus & (*)	2009	2020
Papers (international) not-ISI	1	(*)	2017	2017
Conference Proceedings	5	(*)	2003	2015
Book chapters	2	(*)	2013	2019
Erratum	3	Scopus	2012	2019

Hirsch (H) Index	25
15-years H index	23
Total Citations	2033
Average number of Citations for Publication	20.33
Total Impact Factor	406.8
Average Impact Factor for Publication	4.06

Details: 10 years 2010-2020; 15 years 2005-2020; total Impact factor calculated from data obtained using the Journal of Citation Reports database; Citation retrieved from Scopus (19 January 2020); Average Citation per Product and Average Impact Factor calculated in respect to the number of products quoted in the Scopus Database (i.e. 100);

(*) personal database. The complete list of publication is provided separately

Part IX – Selected Publications

List of the publications selected (12) and provided as separated files, for the evaluation. For each publication report title, authors, reference data, journal IF, citations, press/media release (if any).

1. S E.Mourad, Y.K.Petit, R.Spezia, A.Samojlov, F.F.Summa, C.Prehal, C.Leybold, N.Mahne, C.Slugovc, O.Fontaine, S.Brutti, S.A.Freunberger. Singlet oxygen from cation driven superoxide disproportionation and consequences for aprotic metal-O₂ batteries. *Energy and Environmental Science* 12 (2019) 2559-2568 **IF 33.250 (citations: 3)**
2. M.Carboni, J.Manzi, A.R.Armstrong, J.Billaud, S.Brutti, R.Younesi. Analysis of the solid electrolyte interphase on hard carbon electrodes in sodium-ion batteries. *ChemElectroChem* 6 (2019) 1745–1753 **IF 4.446 (citations: 3)**
3. S.Zilio, J.Manzi, A.Fernicola, A.Corazza, S. Brutti. Gas Release Mitigation in LiFePO₄-Li₄Ti₅O₁₂ Li-ion pouch cells by an H₂-selective getter. *Electrochimica Acta* 294 (2019) 156 **IF 5.383 (citations: 0)**
4. Marco Carboni, Andrea Giacomo Marrani, Riccardo Spezia and Sergio Brutti. Degradation of LiTfO/TEGME and LiTfO/DME Electrolytes in Li-O₂ Batteries. *Journal of The Electrochemical Society* 165 (2018) A118-A125 **IF 3.662 (citations: 5)**
5. A.Gentile, D.Giacco, A.De Bonis, R.Teghil, A.G.Marrani, S. Brutti. Synergistic electro-catalysis of Pd/PdO nanoparticles and Cr(III)-doped NiCo₂O₄ nanofibres in aprotic Li-O₂ batteries. *Journal of the Electrochemical Society* 165 (2018) A3605 **IF 3.662 (citations 0)**
6. Agostini, M., Matic, A., Panero, S., Croce, F., Gunnella, R., Reale, P., Brutti, S. A mixed mechanochemical-ceramic solid-state synthesis as simple and cost effective route to high-performance LiNi_{0.5}Mn_{1.5}O₄ spinels. *Electrochimica Acta*, 235 (2017) 262-269. **IF 4.798 (citations: 9)**
7. Brutti, S., Manzi, J., Meggiolaro, D., Vitucci, F.M., Trequattrini, F., Paolone, A., Palumbo, O. Interplay between local structure and transport properties in iron-doped LiCoPO₄ olivines. *Journal of Materials Chemistry A*, 5 (2017) 14020-14030. **IF 8.867 (citations: 11)**
8. Manzi, J., Brutti, S. Surface chemistry on LiCoPO₄ electrodes in lithium cells: SEI formation and self-discharge. *Electrochimica Acta*, 222 (2016) 1839-1846. **IF 4.798 (citations: 14)**
9. Vitucci, F.M., Paolone, A., Palumbo, O., Greco, G., Lombardo, L., Köntje, M., Latini, A., Panero, S., Brutti, S. High-Temperature Structural Evolution of the Disordered LiMn_{1.5}Ni_{0.5}O₄. *Journal of the American Ceramic Society*, 99 (2016) 1815-1822. **IF 2.841 (citations: 7)**
10. Di Lecce, D., Manzi, J., Vitucci, F.M., De Bonis, A., Panero, S., Brutti, S. Effect of the iron doping in LiCoPO₄ cathode materials for lithium cells. *Electrochimica Acta*, 185 (2015) 17-27. **IF 4.803 (citations: 23)**
11. Manzi, J., Vitucci, F.M., Paolone, A., Trequattrini, F., Di Lecce, D., Panero, S., Brutti, S. Analysis of the self-discharge process in LiCoPO₄ electrodes: Bulks. *Electrochimica Acta*, 179 (2015) 604-610. **IF 4.803 (citations: 17)**

12. Meggiolaro, D., Gigli, G., Paolone, A., Reale, P., Doublet, M.L., Brutti, S. Origin of the Voltage Hysteresis of MgH₂ Electrodes in Lithium Batteries. Journal of Physical Chemistry C, 119 (2015) 17044-17052. **IF 4.509 (citations: 22)**

Roma, 21 Gennaio 2020

Dr. Sergio Brutti



Il sottoscritto presenta questo curriculum firmato come dichiarazione sostitutiva di certificazione ai sensi del DPR 445/2000 ed è consapevole delle sanzioni penali nelle quali incorrerebbe per dichiarazioni mendaci. Tale curriculum è accompagnato da fotocopia di un documento di riconoscimento valido (art. 76 DPR 445/2000).