

## Curriculum Summary – Emerson Sarmiento Gonçalves

### 1. Training

Start and end year	Title or activity	Duration (months)	Institution	Unit/ Advisor	Title of The Work
1993-1998	Under-graduation	60	Federal University of Alagoas	Technology Center / Altair Marques da Silva	Thermodynamic and Transport Aspects of Ethenus Oxychlorination
1999-2001	Master degree	25	State University of Campinas	Faculty of Chemical Engineering / Gustavo Paim Valença	Synthesis Gas Reaction Catalysts Project
2004-2008	Doctorate	50	Aeronautical Technological Institute	Aeronautical and Mechanical Engineering / Neidenei Gomes Ferreira	Morphology, structure and electrochemistry of reticulated vitreous carbon as a three-dimensional electrode obtained at different temperatures

### 2. Professional history.

1. **2012 - current: Technological Institute of Aeronautics - ITA.** Functional Position: Effective Professor of Graduate Program in Space Science & Technologies, in the area of Materials Chemistry. Lecturer in Chemical Kinetics and Electrochemistry.
2. **2012 - 2012: Vale do Paraíba University - UNIVAP.** Functional Position: Professor, Workload: 12h. Chemical Engineering Professor, at the Faculty of Engineering, Architecture and Urbanism. Lecturer in reactor calculation disciplines, Chemical Engineering Laboratory (Catalysis), Gas Dynamics and Analytical Chemistry.
3. **2002 - Current: Aeronautics and Space Institute - IAE/DCTA.** Functional Position: Senior Researcher, Workload: 40 h. Currently in the Materials Division (AMR) of the IAE/DCTA.
4. **2007 - Current: Head of the Laboratory of Physical-Chemical Characterization of AMR-IAE/DCTA.** Laboratory sub-areas: Electrochemistry, Thermal Analysis, Rheological and Dynamic-mechanics, Spectrophotometry, Synthesis of Conductive Polymers, Amorphous Carbon, Carbon Composites and Graphene.
5. **2020 – current: Designated by the IAE as a member of the Dialogue of Defense Industries Brazil-Israel, with the General Staff of the Air Force.**
6. **2021 - current: Member of the Commission of the Institutional Program of Scientific and Technological Initiation** Scholarships (CNPq) at IAE/DCTA

### 3. List of most relevant publications

1. ASSUNÇÃO, A. L. C. ; Sanches, R. M. ; **GONÇALVES, Emerson Sarmiento** . Effects of exfoliated graphite addition in ultra-trace concentration on industrial-scale lead-acid battery performance. JOURNAL OF ENERGY STORAGE (JCR = 8.907), v. 58, p. 106429, 2023.
2. Gandara, M. ; DALMOLIN, C. ; **Gonçalves, Emerson Sarmiento**. Physico-chemical Interactions between Polyaniline and Graphene Oxide: the reasons for the stability of their chemical structure and thermal properties. MATERIALS TODAY CHEMISTRY (JCR = 7.613), v. 22, p. 100627, 2021. 2 citations
3. GODOY, ANNA PAULA ; AMURIM, LEICE G. ; MENDES, ALEXANDER ; **GONÇALVES, Emerson S.** ; FERREIRA, ANDERSON , DE ANDRADE, CAROLINA SANTOS ; KOTSILKOVA, RUMIANA ; IVANOV,

EVGENI ; LAVORGNA, MARINO ; SAITO, LUCIA A.M. ; RIBEIRO, HELIUM ; ANDRADE, J.E. . Enhancing the electromagnetic interference shielding of flexible films with reduced graphene oxide-based coatings. PROGRESS IN ORGANIC COATINGS (JCR = 6.206), v. 158, p. 106341, 2021. 10 citations.

4. **GANDARA, M.; GONÇALVES, E. S.** Polyaniline supercapacitor electrode and carbon fiber graphene oxide: electroactive properties at the charging limit. ELECTROCHIMICA ACTA (JCR = 7.336), v. 345, p. 136197, 2020. 11 citations.
5. **GANDARA, M.; Gonçalves, E. S.** Electroactive composites: PANI electrochemical synthesis with GO and rGO for structural carbon fiber coating. PROGRESS IN ORGANIC COATINGS (JCR = 6.206), v. 138, 105399, 2020. 10 citations.
6. **BALDAN, M. R. ; ALMEIDA, E. C. ; AZEVEDO, A.F. ; GONÇALVES, E. S.; REZENDE, M.C. ; FERREIRA, N.G.** Raman validity for crystallite size La determination on reticulated vitreous carbon with different graphitization index. APPLIED SURFACE SCIENCE (JCR = 7.392), v. 254, p. 600-603, 2007. 62 citations, one in patent.

#### 4. List of research funding

##### 1. List of current research funding from any agency or company

**2022 – current:** Infrastructure Project - Laboratory of high performance energy accumulators to support the electrification of air mobility systems. Responsible Researcher: Emerson Sarmiento Gonçalves. Funder: **FINEP** (01.22.0609.00) - Financial assistance to Regular Research, 2022 to 2024.

**2022 – current:** Research Project - Development of supercapacitor devices from 2D and 3D nanomaterial electrodes - Graphene, MXene and Metallic Nanooxides. Responsible Researcher: Emerson Sarmiento Gonçalves. Funder: **FAPESP** (2022/02737-0) - Financial assistance to Regular Research, 2022 to 2024.

**2022 – current:** Research Project - New technologies for high-performance batteries to support and electrify air mobility systems. Responsible Researcher: Emerson Sarmiento Gonçalves. Funder: **CNPq** (407960/2022-8) - Financial assistance to Regular Research, 2022 to 2025.

**2021 - current:** Technological Development Project - Development of electric battery-powered passenger vehicles with module for extension of autonomy from the use of ethanol with a small flex engine. Responsible Researcher: Pedro Teixeira Lacava (ITA). Members: Emerson Sarmiento Gonçalves (IAE/ITA), and collaborators (see [lattes](#)). Funder: **National Electric Energy Agency**. – Grant, PhD Researcher, 2021 to 2025.

**2021 – current:** Teaching Project - UNESCO UNITWIN Network: Innovative, Sustainable and Clean Energy Research and Education. Responsible Researcher: Aristide Fausto Massardo (UNIGE); Members: Emerson Sarmiento Gonçalves (IAE/ITA), and collaborators (see [lattes](#)).

**2020 – current:** Integrated system for controlling epidemics and endemic diseases through artificial intelligence techniques applied to the analysis of georeferenced medical and viral dispersion data. Responsible Researcher: Domingos Alves Rade (ITA) ; Members: Emerson Sarmiento Gonçalves (IAE/ITA), and collaborators (see [lattes](#)). – Funder CAPES – Financial assistance to Regular Research, 2020 to 2023.

##### 2. List of completed research funding from any agency or company

**2020 – 2022:** Research Project - Obtaining Reduced Graphene Oxide for Application in Aerospace Sensor Systems. Responsible Researcher: Emerson Sarmiento Gonçalves. Funder: **FAPESP** (2017/17661-0) - Financial assistance to Regular Research.

**2020 – 2022:** Research Project - High performance porous carbon accumulators for energy support of complex hubs powered by water desalination system. Responsible Researcher: Emerson Sarmiento Gonçalves. Funder:

**FAPESP** (2019/27394-5) - Financial assistance to Regular Research.

**2019 - 2021: Obtaining** and characterization of composite with supercapacitor activity for lead-acid batteries / Polyaniline/Graphene Oxide composites in three-dimensional Carbon Felt Electrodes with Functional Differences for applications in Supercapacitors. Situation: Completed; Nature: Research & Development. Students involved: Academic Master's degree: (2) Doctorate: (1). Members: Emerson Sarmiento Gonçalves - Coordinator / Ary Leonídio do Carmo Assunção - Member. Funder: Edson Mororó Moura Technology Institute - Baterias Moura – 3 Scholarships.

**2020:** International Training Project via CAPES/PrInt-ITA. Project: Carbon/Conductive Polymer Nanocomposites for Energy Storage Systems – Training on Extreme Potential Test and Ageing of Electrodes under Cycling and Floating. Nature: Research. Members: Emerson Sarmiento Gonçalves - Member / Rogério Pirk - Coordinator / François Béguin - Member / Elżbieta Fraćkowiak - Member. Funder: CAPES.

**2017 - 2019: Research Project - Construction of Chemical reactor and electrochemical database for optimization of electromagnetic and electrochemical properties.** Responsible Researcher: Maurício Ribeiro Baldan (LAS/INPE). Associate Researcher: Emerson Sarmiento Gonçalves; Associate Researcher: Adriana Medeiros Gama. Funder: São Paulo State Research Foundation (2016/11462-3) - Financial Assistance.

**2014 - 2016: Research Project - Development of Materials for Application in Ablative thermal protection systems and resistant to wear.** Members: Luis Cláudio Pardini, Ronald Izidoro Reis, Emerson Sarmiento Gonçalves, Cristian Frederico Von Dollinger, Cristina Moniz Araújo Lopes, Luis Eduardo Vergueiro Gomes da Costa, Andreza de Moura - Member / Luis Claudio Pardini - Coordinator. Funder: CNPq (401963/2013-6 - DMASP-AD) - Financial Assistance.

**2005 - 2008: Research Project - Obtaining and Characterization of Modified Reticulated Vitreous Carbon Electrodes with Conducting Polymers for Application in Batteries.** Members: Emerson Sarmiento Gonçalves - Member / Mirabel Cerqueira Rezende - Coordinator. Funder: São Paulo State Research Foundation (05/50718-9) - Financial Assistance.

5. **Quantitative indicators.** 1) publications in journals with selective editorial policy: 25; 2) book chapters: 1; 3) master's dissertations oriented and defended: 13 (+ 2 in progress); 4) doctoral theses oriented and defended: 2 (+ 4 in progress); 5) Postdoctoral Supervision: 1; 6) Citations received in the international scientific literature, according to the Publons (366;  $h = 11$ ), Scopus (413;  $h = 11$ ), Research Gate (466;  $h = 12$ ) or Google Scholar (517;  $h = 13$ ;  $i_{10} = 16$ ).

6. **Link** to MyResearcherID (ISI) or MyCitations (Google Scholar): <https://www.scopus.com/authid/detail.uri?authorId=14024551100>; <http://www.researcherid.com/rid/N-6298-2018>; and [https://scholar.google.com.br/citations?hl=pt-BR&user=E68JQVMAAAJ&view\\_op=list\\_works](https://scholar.google.com.br/citations?hl=pt-BR&user=E68JQVMAAAJ&view_op=list_works)

7. **Other information:**

7a) Awards:

- Honorable Mention (best dissertation): Cecchini Award – ITA

Meriene Gandara: Polyaniline Composite/Graphene Oxide anchored in carbon fiber for hybrid lead batteries (orientation).

7b) Personal leave:

- From 2004 to 2012, the researcher experienced serious family problems, in which he had *a long process of*

*recovery*. Thus, this researcher productivity had a gap. However, since late 2013, the researcher's group regaining its productivity. Supporting documentation about his recovery and health concerns at this period may be sent to FAPESP, if requested.

7c) Scientific collaborations:

National:

- Dr. Rosa Maria da Rocha – from the same institution;
- Dr. Marcelo Assato – from the same institution;
- Prof. Dr. Silvana Navarro Cassu – from the same institution;
  
- Prof. Dr. Elizabete Y. Kawachi – ITA;
- Prof. Dr. Luciana S. Cividanes – ITA;
- Prof. Dr. Gilmar Patrocínio Thim - ITA;
- Prof. Dr. Pedro Teixeira Lacava – ITA;
- Prof. Dr. Guilherme Borges Ribeiro – ITA;
- Prof. Dr. Hamilton Brandão Varela De Albuquerque – Institute of Chemistry of São Carlos, University of São Paulo;
- Prof. Dr. André Henrique Baraldi Dourado – São Paulo State University;
- Prof. Dr. Hélio Ribeiro – Mackenzie Presbyterian University;
- Prof. Dr. Ricardo Jorge Espanhol Andrade – Mackenzie Presbyterian University;
- Prof. Dr. Carla Dalmolin – CCT – State University of Santa Catarina;
- Prof. Dr. Daniela Becker – CCT – University of the State of Santa Catarina;
- Prof. Dr. Luiz Antônio Ferreira Coelho – CCT – University of the State of Santa Catarina;
- Prof. Dr. Marcos Antônio Coelho Berton – SENAI Institute of Innovation in Electrochemistry (ISI-EQ) – Federation of Industries of the State of Paraná.

International:

- Prof. Dra. Biljana Šljukić Paunkovic – University of Belgrade, Serbia;
- Prof. Dr. Diogo Miguel Franco dos Santos – Instituto Superior Técnico, Universidade de Lisboa, Portugal;
- Prof. Dr. Matthew Suss – the Israel Institute of Technology (Technion), Haifa, Israel;
- Prof. Dr. Edward P. L. Roberts – University of Calgary, Canadá.