C U R R I C U L U M V I T A E

1. Personal Information.

First and Family name: **Marisa Alejandra Frechero**

ID: 17.363.270

Age: 55

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Address: Universidad Nacional del Sur. Dpto. de Química. Av. Alem 1253 PC 8000 Bahía Blanca. Argentina.

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Researcher Numbers:

https://www.scopus.com/authid/detail.uri?authorId=6507908407

http://orcid.org/0000-0002-9307-5946

https://scholar.google.com.ar/citations?hl=es&user=W-b6-0wAAAAJ&view_op=list_works&sortby=pubdate

https://www.researchgate.net/profile/Marisa_Frechero

2.EDUCATION

2004-PhD IN CHEMESTRY, Universidad Nacional de Sur

2000- LIC. CHEMISTRY, Universidad Nacional de Sur

1990-PROFESSOR OF PHYSICS, INSPT.

3. PROFESSIONAL APPOINTMENTS.

2016-today Full Professor, Universidad Nacional de Sur.

2005-today CONICET Researcher.

2000-2016 Assistance Professor, Universidad Nacional de Sur.

1997-2000 Assistance Professor, Universidad Tecnológica Nacional.

1990- 1997 Institute Physics Professor.

4. VISITING PROFESSOR:

- 14/04 - 15/05 2009; 30/08 - 02/12 **2010**; 23/10 - 22/11 **2012**; 10/4 - 11/5 **2018**; 1/6 - 13/8 **2019**: Dept. Física Aplicada III. Universidad, Complutense de Madrid, Spain.
- 27 /09 - 28/11 **2006**: Lab. des Colloïds, Verres et Nanomatériaux, Montpellier, Francia.Proy.ECOS
- 15/06 - 15/12 de **2013**: Research & Development Staff. Dpto. de Física Aplicada III, Universidad Complutense de Madrid en el Grupo de Física de Materiales Complejos. Proyecto PHAMA.

5. GRADUATE STUDENTS THESIS SUPERVISED: (18)

6. RESEARCHERS SUPERVISED: PhD Thesis (8), postdoctoral researchers (17), technical staff (3), temporary visitors (6).

7. **RESEARCH INTERESTS:** solid conductor materials, ceramics and glasses, green energy storage, low environmental impact materials and processes. Experimental design. and Molecular dynamic simulation.

8. PUBLICATIONS - MOST RELEVANT PEER-REVIEWS PUBLICATIONS, LAST 10 YEARS.

-A weak mixed mobile ion effect in Vanadium-Tellurite oxide glass modified by Silver and Lithium cations. E.C. Cardillo,R.A.Montani , M.A. Frechero, *J. of Non-Crystalline Solids* 356 (**2010**) 2760–2763.

-Effect of silver addition on the structure and methylene blue photodagradation capacity of titania synthesized via a surfactant template route. C. Zubieta, P. Messina, M. Frechero and P. Schulz, *J. Argent. Chem. Soc.*, **2010**, *97*(2), 88-105.

-Structural and dynamical aspects of water in contact with a hydrophobic surface. D. Malaspina, E. P. Schulz, L. M. Alarcón, M. A. Frechero and G. A. Appignanesi.*Eur. Phys. J.* E 032, **2010,** 35–42.

-Colloidal properties of amiodarone in water at low concentration. L. Benedini, P.V. Messina, R.H. Manzo, D. Allemandi, S. D. Palma, E. P. Schulz, M. A. Frechero, P. C. Schulz. *Journal of Colloid and Interface Science* 342,**2010**, 407–414.

-Structure and physical properties of nickel manganite NTC thermistor obtained from nickel permanganate precursor. A. Díez, R. Schmidt, A. Sagua1, M. Frechero, E. Matesanz, C. Leon, E. Morán. *Journal of the European Ceramic Society* 30, **2010**, 2617–2624.

-Sub-nanoscale ruggedness keeps vulnerable proteins dry by adjusting to water coordination resilience. Erica P. Schulz, Marisa A. Frechero, Gustavo A. Appignanesi and Ariel Fernández.*PLoS Comp.Biology* 5, 9, **2010**, e12844.

-Structure and orientation of water molecules at model hydrophobic surfaces with curvature: from graphene sheets to carbon nanotubes and fullerenes. L. M. Alarcon, D. C. Malaspina, E. P. Schulz, M. A. Frechero and G. A. Appignanesi, *Chemical Physics* 388, **2011**, 47–56.

-Aggregation and adsorption behavior of low concentration aqueous solutions of hexadecyltrimethylammonium ortho, meta and parafluorbenzoate. G. Landázuri, J. Alvarez, F. Carvajal, E.R. Macías, A. González-Álvarez, J.L. Rodríguez, R. Minardi, E. P. Schulz, M. Frechero, P.C. Schulz, J.F.A. Soltero, *Journal of Colloid and Interface Science* 370, 1, **2011**, 86-93**.**

-Evidence of active regions for ion transport in lithium silicate glasses using the isoconfigurational ensemble. R.A. Montani , C. Balbuena, M.A. Frechero, *SSI* 209-210, 23, **2012**, 5-8.

-Caracterización eléctrica de fronteras de grano en conductores iónicos mediante medidas de espectroscopia de impedancias en un bicristal. M. A. Frechero, M. Rocci , Rainer Schmidt, M. R. Díaz-Guillén, O. J. Durá, A. Rivera-Calzada, J. Santamaria y C. León. *Boletín de la Sociedad Española de Cerámica y Vidrio* 51, 1, **2012,** 13-18.

-Intermediate Range Structure in Ion-Conducting Tellurite Glasses. M. A. Frechero, L. Padilla, H. O. Martin, and J. L. Iguain, *arXiv:1210.3492v1 [cond-mat.dis-nn]* **2012.**

-Enthalpy relaxation of the glassy matrix of Vanadium - Molybdenum -Tellurite oxide glasses", E.C. Cardillo, S. Terny, M.A. Frechero, *Thermochimica Acta* 566, **2013**, 10–14.

- An Update On The Situation Of Women In Physics In Argentina. V. Brudny, C. Lagorio, M. Frechero and F.Tamarit, *AIP Conf. Proc*. 1517, 70, **2013**; doi: 10.1063/1.4794224

-Dynamical characterization of active regions environments for ion dynamicsin Lithium metasilicate glasses. C. Balbuena, M.A. Frechero and R. A.Montani, *J. of Non-Crystalline Solids* 369, 17–22, **2013**.

-Intermediate Structures for Higher Level Arrangements: Catching Disk-like Micelles in Decane Phosphonic Acid Aqueous Solutions. Schulz,E., Piñeiro, Á.; Rodriguez,J.; Minardi,R.; Frechero,M.; Schulz,P,*J. Phys. Chem. B*, **2013**, *117* (20), pp 6231–6240.

- Intermediate-range structure in ion-conducting tellurite glasses", M. A. Frechero, L. Padilla, H. O. Martin and J. L. Iguain, *EPL*, 103, **2013,** 36002.

-Electrical response of bivalentmodifier cations into a vanadium–tellurite glassy matrix", C.S. Terny, E.C. Cardillo, P.E. diPrátula, M.A. Villar, M.A. Frechero, *Journal of Non-Crystalline Solids* 387, **2014**, 107–111.

- Relaxation pathway confinement as a determinant of glassy dynamics. J. A. Rodriguez Fris, M. A. Frechero and G. A. Appignanesi, *Journal of Chemical Physic,*141, 11, **2014**, 114905.

-Comportamiento eléctrico de vidrios funcionales con base en TeO_2. S. Terny, M.A. De la Rubia, S. Barolin, R.E. Alonso, J. De Frutos y M.A. Frechero, *Boletín de la Sociedad Española de Cerámica y Vidrio,*53, 1, **2014,** 15-20.

-An innovative micrometric granular graphite–glass system composite electrode for use as working electrode in voltammetry applications. G.D. Pierini, J. Presa, M. A. Frechero, M. E. Centurión, M. S. Di Nezio, *Sensors & Actuators: B. Chemical*, 202, 31, **2014**, 433-439.

-Evidence of active regions for ion transport in lithium silicate glasses using the isoconfigurational ensemble. Part II. C.Balbuena, M.A.Frechero, R.A.Montani. *Solid State Ionics* 255, 2014, 135–139.

-Channel diffusion in a lithium potassium metasilicate glass using the Isoconfigurational ensemble: towards a scenario for the mixed alkali effect. C. Balbuena, M.A. Frechero, R.A.Montani. *Journal of Non-Crystalline Solids* 405, 1, **2014**, 124-128.

- The effect of ionization on the adsorption of n-eicosane phosphonic acid on air/water interface. II: Dynamic Simulations. E. P. Schulz, A. Pineiro, M. Frechero, O. Pieroni, P. C. Schulz, J. Minones Conde, J. Minones Trillo. *Langmuir* 31, 8, **2015**, 2269-2280.

- Nearly constant loss in crystalline oxide-ion conductor $Gd_2Zr_2O_7$. M. R. Díaz-Guillén, M. A. Frechero, A. F. Fuentes, J. Santamaría, C. León, *Journal of Electroceramics* 34, 1, **2015**, 15-19.

- Oxygen ion dynamics in pyrochlore-type ionic conductors: Effects of structure and ion-ion cooperativity. Frechero, M.A. Durá, O.J., Díaz-Guillén, M.R., Moreno, K.J., Díaz-Guillén, J.A., García-Barriocanal, J., Rivera-Calzada, A., Fuentes, A.F., León, C.*Journal of Non-Crystalline Solids*407, **2015**, 349-354.

- Study of the incorporation MgO on the electrical conductivity behavior of a TeO_2-V_2O_5-MoO_3 glassy matrix. S. Terny, M.A. De la Rubia, R.E. Alonso, J. De Frutos and M.A. Frechero. *Journal of Non-Crystalline Solids* 411, **2015**, 13-18.

- Is ergodicity in an oxide glass ionic conductor a matter of time? C.Balbuena, R.A.Montani and M.A.Frechero, *Physica A: Statistical Mechanics and its Applications* 432, **2015**, 400-409.

- Is the "Glass Ceiling" a real problem for women Physicists in Argentina? M. A. Frechero, A. Amador, A. J. Ramirez Pastor, F. Tamarit. *AIP Conf. Proc.* **2015**, *AIP Conference Proceedings***1697**, 060002.

- Paving the way to nanoionics: atomic origin of barriers for ionic transport through interfaces. M. A. Frechero, M. Rocci, G. Sánchez-Santolino, A. Kumar, J. Salafranca, R. Schmidt, M. R. Díaz- Guillén, O. J. Durá, A. Rivera-Calzada, R. Mishra, S. Jesse, S. T. Pantelides,S. V. Kalinin, M. Varela, S. J. Pennycook, J. Santamaria & C. Leon. *Scientific Reports*,5:17229, **2015**, DOI: 10.1038/srep17229.

- The influence of transition metal oxides type M+/M++ on the vanadium-tellurite glasses electrical behavior. P. E. di Pratula, S. Terny, E. Cardillo, M. A. Frechero. *Solid State Sciences* 49, **2015**, 83-89.

- Structure and electrical behavior relationship of a magnesium–tellurite glass using Raman and impedance spectroscopy. S. Terny, M. De la Rubia, R. Alonso, J.de Frutos, M.A. Frechero. *J. of Non-Cryst.Sol.* 411, **2015**, 13–18.

- Effect of Ionization on the Behavior of n-Eicosane phosphonic Acid Monolayers at the Air/Water Interface. Experimental Determinations and Molecular Dynamics Simulations. E. Schulz, Á. Piñeiro, J. Miñones Jr. J. Miñones Trillo, M. A. Frechero, O. Pieroni, P. Schulz *Langmuir*, **2015**, *31* (8), 2269–2280.

- A new transition metal-tellurite glass family: electrical and structural properties. S. Terny, M.A. De la Rubia, J. De Frutos, M. A.Frechero. *Journal of Non-Crystalline Solids* 433, **2016,** 68–74.

- A remarkable improvement of ionic conduction in an environmental friendly glassy lithium electrolyte. P. E. di Pátula, S. Terny, M. E. Sola and M. A. Frechero. Research and Reviews in Materials Science and Chemistry 7, 1, **2016**, 25-42 www.jyotiacademicpress.org/jyotic/journalview /21/article /38/65

- Ionic conductivity enhancement achieved by the incorporation of ZnO in a lithium tellurite glass. P.E. di Prátula, S. Terny, M.E. Sola, M.A. Frechero. *Journal of Non-Crystalline Solids* 461,**2017,** 18–23.

- Notes and Reflections on Impedance Spectroscopy. Marisa Frechero. Pharm Anal Acta **2017**, 8:4

- Atomic Resolution STEM-EELS Studies of Defects and Local Structural Distortions in Oxide Interfaces. G Sánchez-Santolino, MA Roldan, Qiao Qiao, L Begon-Lours, MA Frechero, J Salafranca, R Mishra, C Leon, ST Pantelides, SJ Pennycook, JE Villegas, J Santamaría, M Varela. Microscopy and Microanalysis 23 (S1), **2017**, 372-373.Cambridge University Press

- Effect of small mobile cations on molybdenum-borate glasses. Cardillo E, Molina MC, Sola ME, Terny S, Di Prátula P, Frechero MA. *Material Science & Engineering International Journal.* **2018**; 2(6):199–204.

- Captadores solares (ACI1307-17). M. E. Sola, S. Terny, P. E. di Prátula, E. C. Cardillo y Marisa A. Frechero. *Avances en Ciencias e Ingeniería*. V.9, N. 2, Abril-Junio **2018**.

- Sol-Gel synthesis and electrical characterization of doped-carbon decorated mixed conductor ceramics. S. Terny; J. Vega-Castillo; M. A. de la Rubia; J. de Frutos; M. A. Frechero. *Materials Science and Engineering B* 241, **2019,** 66-74.

- Structural anion dynamic cooperation with the most mobile ions in silver iodide near superionic transition. E. I. Vivas Tulandy, A. García Muriel and M. A. Frechero. *Physica A: Statistical Mechanics and its Applications* 523, **2019,** 75-86.

- Structural study offunctional hierarchical porous carbon synthesized from metal organic framework template. Deborath M. Reinoso, Urbano Diaz, Marisa A. Frechero. *Materials Today Chemistry* 14, **2019,** 100188.

- Electrical and magnetic response of a phosphate glass - NiFe2O4 composite. A novel magnetic sensor design. P. E. di Prátula, Pistonesi CA, Anton MA, H. R. di Prátula, Guillermo E, Frechero M.A. *Material Sci & Eng.* **2019**; 3 (1):13–19.

- Aging of an Ionic Conductor Glass Induced by Slight Overheating. Di Prátula, P.; Molina, M.C.; López, O.; M. Villar; Frechero, M. A. *Advanced Science, Engineering and Medicine* 11, **2019,** 1 - 7. issn 2164-6627.

- Optical properties of transition metal oxide-tellurite glasses modified with alkaline earth oxides. S. Terny and M.A. Frechero. *Physica B: Condensed Matter* 583,412054, **2019**.

-Synthesis of a Conductive Glassy System Based on Inorganic Oxides and Carbon Materials and Their Possible Electroanalytical Application. Pierini, G.D., di Pratula, P.E. Ochoa, A.L. Centurión, M.E. Frechero, M.A., Di Nezio, M.S. *Journal of Inorganic and Organometallic Polymers and Materials,* **2020.**

- Importance of finding the proper ratio of alkaline earth oxide in a lithium bismuthate-phosphate glass in order to enhance the tailoring of structural and electrical properties. E. C. Cardillo; S. Terny; C. López; G. Narda; M. A. Frechero. **2020**, Ceramics International 46, 13, **2020**, 21014-21020.

- An innovative method for anchoring glucose-sensing molecules on glassy micro-particles. M. Zoratti, M. E., M. A. Frechero. Material Sci & Eng. **2020**; 4(5):139–142.

- Understanding how the mixed alkaline-earth effect tunes transition metal oxides-tellurite glasses properties Terny, S., Frechero, M.A. Physica B: Condensed Matter, **2020**, 583, 412054

- The crystallization phenomenon on a modified phosphate glass interpreted through the correlation between the a.c. electrical behaviour and the non isothermal nucleation. Luis A. Hernández García, Magalí C. Molina, Pablo E. di Prátula, Sole Terny, José Castillo, Diego Arias Serna, Marisa A. Frechero. Materials Science & Engineering B, Materials Science and Engineering B 266 (2021) 115058.

1- **Book Chapter**: Efectos de interfase sobre la conductividad iónica en materiales de aplicación en pilas de combustible., M. A. Frechero, M. Rocci, R. Schmidt, M. R. Díaz-Guillén, O. J. Durá, A. Rivera-Calzada, J. Santamaria y C. León**.** ***Nanotecnología para energías en latinoamérica***. Editorial:SEFIN Society for Nanomolecular Photovoltaics. ISBN: 978-84-940189-9-2. **2012**

2- **Book Chapter**: Lithium Glasses. Improvements as a solid electrolyte. M.A. Frechero*, E.Cardillo, S. Terny. ***Lithium: Technology, Performance and Safety***. *Nova Science Publishers, Inc*.400 Oser Avenue, Suite 1600. Hauppauge, NY 11788. **2013**. ISBN: 978-1-62417-634-0.

3- **Book Chapter**: Molybdenum oxide. Its positive action on ionic glasses conductors. M.A. Frechero, P. E. diPrátula, E.Cardillo, S.Terny .***Molybdenum: Chemical and electrochemical properties, geological implications and industrial applications.*** *Nova Science Publishers, Inc*.400 Oser Avenue, Suite 1600. Hauppauge, NY 11788. **2014. ISBN:** 978-1-63321-210-7.

4- **Book Chapter**: Chapter 83 Lithium Glasses: Improvements as Solid Electrolyte. M.A. Frechero, E. Cardillo, S. Terny. ***Chemistry Research Summaries. Volume13.*** *Nova Science Publishers, Inc*.400 Oser Avenue, Suite 1600. Hauppauge, NY 11788. **2014**. **ISBN:** 978-1-63463-108-2.

5- **Book Chapter**: *Study of Phosphate Polyanion Electrodes and their performance with glassy electrolytes: potential application in Lithium ion solid state batteries.* S. Terny and M.A. Frechero. **Advanced Materials Series**. WILEY-Scrivener, USA. **2016,** ISBN 978-1-119-24252-9.

6- **Book Chapter**: *Unravelling the Effects of Polaron Conduction on Mixed Conductivity Glasses.* Marisa A. Frechero, Colaboradores: E.C. Cardillo, P. E.di Prátula, S. Terny, L. A. Hernandez García,

M.E. Sola and M. C. Molina. Book: **Polarons: recent progress and perspectives**. Editor: Amel Laref. *Nova Science Publishers, Inc*.400 Oser Avenue, Suite 1600. Hauppauge, NY 11788. **2018**. ISBN: 978-1-53613-935-8.

7- **Book Chapter**: *Relevant features given by the incorporation of alkaline earth oxides in Vanadium Tellurite Oxide glassy matrices.* Marisa A. Frechero, Colaboradores: S. Terny, P. E. di Prátula, E. Cardillo, M.C. Molina, M. E. Sola. Book: **Vanadium: Chemistry, Occurrence and Applications.** Editor: Rob Bowell. *Nova Science Publishers, Inc*.400 Oser Avenue, Suite 1600. Hauppauge, NY 11788. **2019.** ISBN: 978-1-53616-120-5.

8- **Book Chapter**: *Functional ion defects in metal oxides*. S. Terny and M.A. Frechero. Book: **Defects in metal oxides: Fundamentals, designing, development & applications** to be published by Elsevier under the Elsevier Woodhead Imprint **2020.**

9- **Book Chapter**: *Diseño de Nuevos Materiales para la Obtención de Energías Verdes.* Marisa A. Frechero. Book: **Energía** Vol II. AUGM, in press **2021.**

9. CONFERENCE PRESENTATIONS >160

10. PROFESSIONAL ACTIVITIES, HONORS, AWARDS (SELECTED):

Editor: *Algerian Journal of Environmental Science and Technology*. Section: Smart Environment. (www.aljest.net/index.php/aljest/about/editorialTeam)

Guest Editor: *The European Physical Journal E, Springer*; topical issue: Disordered, non-equilibrium systems: From supercooled liquids to amorphous solids. (https://www.epj.org/open-calls-for-papers/101-epj-e/1966-epje-topical-issue-disordered-non-equilibrium-systems-from-supercooled-liquids-to-amo%E2%80%A6)

Editorial Board: *Nano Express. IOP Publishing.* (https://iopscience.iop.org/journal/2632-959X/page/Editorial_board)

Editorial member: MAYFEB, Journal of Physics. (http://mayfeb.com/OJS/index.php/PHY/about/editorialTeam)

Referee for (selected): - Elsevier: Materials Letters, Materials and Design, Journal of Alloys and Compounds, Journal of Non-Crystalline Solids, Solid State Ionics, Thermochimica Acta, Materials Research Bulletin Journal of Power Sources, Materials Today Communications. Royal Society of Chemistry: New Journal of Chemistry. Springer: Spectroscopy Letters.European Journal of Glass Science and Technology Part B. Society of Glass Technology. Material Science & Engineering International Journal. MedCrave.

Professional Societes: Asociación Física Argentina. Asociación Argentina de Fisicoquímica y Química Inorgánica.

Awards (selected): Comisión de Investigaciones Científicas de la Provincia de Buenos Aires. Scolarship University graduates (2000); Fundación Antorchas. "Complex systems relaxation**" (**2002), Comisión Nacional de Energía Atómica, Instituto Balseiro. "Out of equilibrium complex systems" (2004).

11. TALKS AND INVITED SEMINARS: >40

12. INDUSTRIAL PROFESSIONAL ACTIVITY:
1983/84 - CAMARA ARGENTINA DE CURTIEMBRES - Argentina.
1983 - C.I.D.E.C. - Morón - B.A. – Argentina.
1984 - T.E.M.S.A. - Munro - B.A. Argentina.
1984/1985 - GRUPO JUNCAL - Cap. Fed. Argentina.
1986/1987 - PETROPOL SM - Bahía Blanca – Argentina.

1988/1989 - ORINOCO SA - Bahía Blanca- Argentina.
1996/1998 - Asesoramiento en implementación de sistemas de calidad según NORMAS ISO 9000. BQA. Cap. Fed. Argentina.
2008- ITM S.R.L. Asesoramiento y Curso de Capacitación en detección de gases. Bahía Blanca – Argentina.

Pof. FRECHERO, MARISA ALEJANDRA – *Jan* 2021