

Brief CURRICULUM VITAE

Prof. Dr. Leopoldo Suescun.

Current Position: Associate Professor (with Tenure) (Profesor Agregado, Efectivo, Grado 4) Crystallography, Solid State and Materials Laboratory (Cryssmat-Lab/Cátedra de Física/DETEMA) – School of Chemistry, University of Uruguay (Facultad de Química, Universidad de la República) Montevideo, Uruguay.



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- Country of Citizenship: Uruguay.

Fellowships

- Researcher at Centro Interdisciplinario de Nanotecnología y Química y Física de Materiales (CINQUIFIMA) since 2010.
- Research Fellow (Degree 4) PEDECIBA (Program for the Development of Basic Science - Uruguay) in Chemistry since December 2004.
- Member of the International Center for Diffraction Data since April 2009.

Temporary appointments at Universities or Research Institutions

- Visiting Professor, Université de Lorraine, Institut Jean Berriol, Faculté des Ciencias et Technologies, Laboratoire de Cristalographie, Résonance Magnétique et Modélisation (CRM2), Nancy, Francia, from 20/Apr to 20/May/2012.
- Post-Doctoral Appointee. Argonne National Laboratory, Materials Science Division, Neutrons and X-rays Scattering Group and Northern Illinois University, Physics Department, Materials Design Laboratory. Supervisors: Prof. Dr. Bogdan Dabrowski and Dr. James D. Jorgensen (deceased)/Dr Raymond Osborn from Apr./29/2005 to Apr./28/2008.

Education and Degrees

- Ph.D. in Chemistry (Solid State/Crystallography), Feb./2004, Facultad de Química, Universidad de la República & PEDECIBA, Uruguay. Thesis Title: Structural and magnetic characterization of 112 perovskite type REBaCuCoO₅+ \square compounds (RE=rare earths and yttrium). Thesis Advisor: Prof. Dr. Alvaro W. Mombrú.
- M.Sc. (Mar/1999) B.Sc. (Aug/1996) in Chemistry (Crystallography), Mar./1999, Facultad de Química, Universidad de la República & PEDECIBA, Uruguay.
- B.Sc. (Aug/1996) in Chemistry Facultad de Química, Universidad de la República, Uruguay.

Scholarships and awards

- Awarded Level I (Young Researcher), National Research Fund, Ministry of Education and Culture, Uruguay, for the period 2002-2004.
- Awarded Level I, Sistema Nacional de Investigadores, Agencia Nacional de Investigación e Innovación, for the period 2009-2013.

During Ph.D. and M.Sc. studies:

- Ph.D. Scholarship - PEDECIBA, Uruguay, Apr./2000 – Aug./2002.
- MSc. Scholarship – PEDECIBA, Uruguay, Oct./1996 – Sep./1998.
- "International Union of Crystallography Young Scientist Award" covering local expenses to participate in the Seventh BCA/CCG Intensive Course in X-ray Structure Analysis. Durham, UK, 7-15, Apr./1999.

Academic Relations and Ongoing Collaborations

- Prof. Gilles H. Gauthier, Universidad Industrial de Santander, Bucaramanga, Santander, Colombia.
- Prof. Adriana Serquis, Instituto Balseiro, Centro Atómico Bariloche – CNEA, Bariloche, Pcia. de Rio Negro, Argentina.
- Prof. Elvira Zeballos, Facultad de Ciencias Físicas, Universidad Nacional Mayor de San Marcos, Lima, Perú.
- Prof. Diego Lamas, Universidad Nacional del Comahue, Neuquén, Argentina.
- Dr. Federico A. Rabuffetti, University of Southern California, Los Angeles, California, USA.
- Prof. Konrad Swierczek, AGH University of Science and Technology, Department of Solid State Chemistry, Krakow, Poland.
- Prof. Bogdan Dabrowski, Northern Illinois University, Physics Department, DeKalb, IL, USA

Grants

- Project "Difractómetro de Rayos X de monocristal automático" PR_EQC_2012_1_07, Agencia Nacional de Investigación e Innovación, for the period Jul/2013-Jul/2014. Total Amount 400,000 US\$.
- Project "Desarrollo de Celdas Combustibles de Óxido Sólido (SOFC) con tecnología nacional Parte I: Diseño y evaluación de nuevos Cátodos y pares Cátodo-Electrolito para SOFCs" PR_FCE_2009_51 Fondo Sectorial de Energía – 2009 (Agencia Nacional de Investigación e Innovación), for the period Dec/2010-Nov/2012. Total Amount 100,000 US\$.
- Project "Structural and magnetic study on the REBaCuMO₅+□□(RE=rare earths or Y, M=Fe or Co)" N° 6046 Fondo Clemente Estable – 2000 (Ministry of Education – Uruguay), for the period Jan 2001 – Dec 2002. Total Amount 9,900 US\$.

Highlighted presentations (last 3 years)

Invited talks

- "Difracción de rayos X de materiales policristalinos: fundamentos y aplicaciones" y "Análisis estructural a partir de datos de difracción de rayos X de policristal. El método de Rietveld" Invited Talks II Encuentro de Cristalografía, Universidad Nacional Mayor de San Marcos, Lima, Perú, 17-18/Abr/2013.
- "Difracción de rayos X, neutrones y electrones como técnicas complementarias para la caracterización de materiales cerámicos" Invited Talk at SARX2012, Hotel Tamacá, Santa Marta, Colombia, 18-23/Nov/2012.

- "Identificación, determinación y refinamiento de la estructura del compuesto $\text{Sr}_7\text{Mn}_7\text{O}_{19}$ utilizando datos de difracción de neutrones de tiempo de vuelo in-situ y en batch y rayos X de ultra-alta resolución." Charla Invitada en Escuela de la Asociación Argentina de Cristalografía, Instituto Balseiro – Centro Atómico Bariloche, Provincia de Rio Negro, Argentina. 7/Nov/2011. Invited by Dr. Gabriela Aurelio.

Selected talks

- "Comparación entre la calidad de resultados de refinamiento de monocristal y polvo convencional y de sincrotrón para el MOF cúbico $[\{\text{Ca}(\text{H}_2\text{O})_6\}\{\text{CaGd}(\text{oda})_3\}_2]\cdot 4\text{H}_2\text{O}$." de Suescun L., Wang J., Peinado G., Torres J., Kremer C. en VIII Reunión de la Asociación Argentina de Cristalografía, Santa Fe, Pcia. de Santa Fe, Argentina, 31/Oct-2/Nov/2012.
- "A new homologous series of vacancy ordered strontium manganese perovskites" by Suescun L. and Dabrowski B. 22nd International Union of Crystallography Congress and General Assembly (IUCr22), Madrid, Spain, Aug./25/2011.

Poster presentations

- "New materials in the series $\text{La}_4\text{BaCu}_{5-x}\text{M}_x\text{O}_{13+\delta}$ (M=Mn, Fe, Co, Ni). Synthesis and structural characterization" Vázquez S., Suescun L., Davyt S., Macias M, Gauthier G., SARXS2012, Hotel Tamacá, Santa Marta, Colombia, 18-23/11/2012.
- "Resolución estructural del complejo $[\{\text{Ca}(\text{H}_2\text{O})_6\}\{\text{CaGd}(\text{oda})_3\}_2]\cdot 4\text{H}_2\text{O}$ por difracción de rayos X en monocristal y comparación de resultados con base de datos cristalográfica" Peinado G., Suescun L., Faccio R., Torres J., Kremer C., Burrow R., "Estudio de la estabilidad entre cátodo-electrolito para celdas de combustible de óxido sólido de temperatura intermedia" Davyt S., Suescun L., Vázquez S. "Nuevos materiales de la serie $\text{La}_4\text{BaCu}_{5-x}\text{M}_x\text{O}_{13+\delta}$ con (M=Fe, Ni). Síntesis y caracterización estructural" Vázquez S. Suescun L. Romero M., Davyt S., VIII Reunión de la Asociación Argentina de Cristalografía, Santa Fe, Pcia. de Santa Fe, Argentina, 31/Oct-2/Nov/2012.
- "Transición de estructura piramidal a brownmillerita a través de un nuevo ordenamiento de tetraedros en manganitas de la serie $\text{La}_x\text{Sr}_{1-x}\text{MnO}_{2.5}$ (x=0.5 - 0.6)." Suescun L., Remsen S., Mais J. y Dabrowski B., VII Reunión de la Asociación Argentina de Cristalografía, San Carlos de Bariloche, Pcia. Rio Negro, Argentina, 2-4/Nov/2011.
- "Octaedros, Pirámides y Tetraedros como bloques de construcción de perovskitas de manganeso deficientes en oxígeno" Suescun L., 2do Encuentro Nacional de Química, Montevideo, Uruguay, 24-26/Oct/2011.
- "Frustración magnética local en perovskitas deficientes en oxígeno de la serie $(\text{La}_{1-x}\text{Sr}_x)_5\text{Mn}_5\text{O}_{13}$ " Suescun L. y Dabrowski B. II Reunión conjunta de la Asociación Física Argentina y la Sociedad Uruguaya de Física, Montevideo, Uruguay, 20-23/Oct/2011.
- "In-situ structural characterization of nano-sized scandia-doped zirconia" Fernández-Werner L., Suescun, L., Abdala, P.M., Lamas, D.G., Chen, H., Craievich A.F. 20ª Reuniao Anual do Usuarios do LNLS, Campinas, Sao Paulo, Brasil, 21-22/Feb/2010.
- "Metal-organic frameworks containing diacetates: polymorphism and related compounds" Suescun L., Torres J., Pintos V., Kremer C., Faccio R., Mombrú A.W., Toby B.H. & Wang J., International Center for Diffraction Data March Meeting 2010. Newtown Sq., PA, USA. 13-16/Mar/2010.

Seminars and conferences

- "Manganitas de estroncio y cupratos de lantano de fórmula general $\text{A}_5\text{B}_5\text{O}_{13}$. Estructura y potenciales aplicaciones como cátodos de IT-SOFC." Seminar at Centro Atómico Bariloche – Instituto Balseiro, Bariloche, Pcia. Rio Negro, Argentina. 12/Mar/2013. Invited by Adriana Serquis.
- "Structural and magnetic characterization of $\text{Sr}_{1-x}\text{La}_x\text{MnO}_y$ oxygen vacancy ordered phases ($0 \leq x < 0.4$, $2.5 \leq y < 2.75$)" Seminar at Institut Laue-Langevin, College of Crystallography and Magnetism, Grenoble, Francia. 14/May/2012. Invited by Dr. Gabriel Cuello.

- "Structural and magnetic characterization of $\text{Sr}_{1-x}\text{La}_x\text{MnO}_y$ oxygen vacancy ordered phases ($0 \leq x < 0.4$, $2.5 \leq y < 2.75$)" Seminar at AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Department of Energy and Fuels. 16/May/2012. Invited by Prof. Konrad Swierczek.
- "Structural and magnetic characterization of $\text{Sr}_{1-x}\text{La}_x\text{MnO}_y$ oxygen vacancy ordered phases ($0 \leq x < 0.4$, $2.5 \leq y < 2.75$)" Seminar at Université de Lorraine, Institut Jean Berriol, Faculté des Sciences et Technologies, Laboratoire de Cristallographie, Résonance Magnétique et Modélisation (CRM2), Nancy, Francia. 18/May/2012. Invited by Prof. Massimo Nespolo.
- "Structural characterization of oxygen deficient perovskites of the $\text{La}_x\text{Sr}_{1-x}\text{MnO}_y$ series by x-ray and in-situ neutron powder diffraction" Seminario invitado en Instituto de Física, Universidade Federal de Mato Grosso, Cuiabá, MT, Brasil. 13/Abr/2010. Invited by Prof. Rogério Junqueira-Prado.

Short-term projects performed at User Facilities or Universities abroad (last 3 years)

- 4-13 Mar. 2013. Centro Atómico Bariloche – Instituto Balseiro – Grupo de Caracterización de Materiales – Bariloche – Pcia. Rio Negro – Argentina. Determination of electrochemical performance of symmetric cathode-electrolyte cell for testing of new IT-SOFC cathode materials.
- 3-8 Dec. 2012. Laboratorio Nacional de Luz Sincrotron – Campinas – Sao Paulo – Brasil. Experiment D10B - XPD-13476 – "Structural characterization of $\text{La}_{0.8}\text{Ba}_{0.2}\text{Cu}_{1-x}(\text{Fe}/\text{Co}/\text{Ni})_x\text{O}_{3-\delta}$ materials at operation temperatures."
- 17-21 Feb. de 2011. Laboratorio Nacional de Luz Sincrotron – Campinas – Sao Paulo – Brasil. Experiment D10B - XPD-10955 – "Activation state of insaturated metal sites for H_2 -storage by water removal in $\text{La}_2\text{M}_3(\text{oda})_6 \cdot x\text{H}_2\text{O}$ MOF showing 1nm channels".
- 31 Aug.- 2 Sep. 2010. Laboratorio Nacional de Luz Sincrotron – Campinas – Sao Paulo – Brasil. Experiment D10B - XPD-9866 "1st and 2nd order phase transitions in Gd-Mn and Yb-Co compounds of the cubic $\text{Ln}_2\text{M}_3(\text{oda})_6 \cdot x\text{H}_2\text{O}$ series".
- 23-26 May. 2010. Laboratorio Nacional de Luz Sincrotron – Campinas – Sao Paulo – Brasil. Experiment XPD-9384 "Vacancy ordering melting in $\text{Sr}_5\text{Mn}_5\text{O}_{13}$ ($\text{SrMnO}_{2.6}$) and $\text{Sr}_7\text{Mn}_7\text{O}_{19}$ ($\text{SrMnO}_{2.715}$)".

Teaching Experience

Tutoring:

At Universidad de la República, Montevideo, Uruguay

- Several undergraduate level courses on Mechanics, Electromagnetism and Crystallography for undergraduate and graduate students of Chemistry, Chemical Engineering, Pharmaceutics and Biochemistry since 1995.
- "Use of Cambridge Crystallographic Database" within the Workshop: "Computational techniques for the discovery of new drugs", CYTED, X2 Project, 29 Aug – 3 Sep 1999, Montevideo, Uruguay.

At Argonne National Laboratory, Argonne, Illinois, USA

- "Neutron Powder Diffraction" 2 experimental sections. National School on Neutron and X-ray Scattering organized by Department of Educational Programs-Argonne National Laboratory, Aug./2005 and Aug./2006.

At Northern Illinois University, DeKalb, Illinois, USA

- Tutoring of Master Student Manasa Majjigga (May./2005 to Sep./2006) and Michael Himes (Jun./2007 to Apr./2008) and PhD. Students Sevda Avci (May./2005 to Nov./2006), James Mais (May./2005 to

Apr./2008) and Steven Remsen (Jun./2006 to Apr./2008) in aspects related to Powder Diffraction, Rietveld analysis and wet-chemistry synthesis.

Lecturing:

At Universidad de la República, Montevideo, Uruguay

- "Materials Chemistry" for undergraduate students in Chemistry since 2008.
- "Fourier Series and its application to Crystallography" for graduate students in Chemistry.
- Physics II and Physics 102 (Introduction to Electromagnetism) for undergraduate students in Chemistry. 1999-2004.
- "Crystallography" for undergraduate students in Chemistry and Biochemistry and graduate Students in Chemistry since 1995.

At Argonne National Laboratory, Argonne, Illinois, USA

- "Powder Diffraction analysis, the Rietveld Method in GSAS" lecture for graduate students as part of the "Neutron Powder Diffraction" section of the National School on Neutron and X-ray Scattering organized by Department of Educational Programs-Argonne National Laboratory, Aug./2006.

At Northern Illinois University, DeKalb, Illinois, USA

- "Materials Science" for undergraduate students in Physics and Engineering, 3 classes on crystal structure and powder diffraction, 2006.

Other Information

Computing Literacy

- Some experience in FORTRAN Language programming.
- Operative Systems used: Microsoft DOS, Windows 9x/2000/XP administrator, UNIX user, LINUX administrator (initiate).
- Cooperation in the preparation and maintenance of the web site of the Crystallography and Solid State Chemistry Laboratory. <http://cryssmat.fq.edu.uy/english/start.htm>.

Languages

- Spanish (mother tongue).
- English, 10 years of formal education. First Certificate in English , University of Cambridge, Jun 1991. Very good skills in Reading, Writing and Speaking.
- French, 6 years of formal education (secondary school). Good skills in Reading.
- Portuguese. Very good skills in Reading and Speaking.

Memberships:

- Member of the Asociación Argentina de Cristalografía since Oct/2008.
- Member of the American Crystallographic Association since Aug/2004.
- Member of the Uruguayan Society of Physics (SUF) since Dec/1997.

Science Dissemination Activities:

- Producer of Science Video Series (in Spanish) “¿Qué es?” Serie 1 and Serie 2 (Serie 3 in process) for PEDECIBA (Program for Development of Basic Science, Uruguay) in collaboration with Tarkiofilm. Videos available at www.youtube.com/user/PEDECIBA25.
- Publication of article: “Cristalografía de rayos X: 100 años de la disciplina que cambió al mundo” Suescun L., Publicado en Uruguay Ciencia, No 15 (Setiembre 2012) 24-27.

Publications List (last 5 years)

70. Suescun L., Wang Jun, Faccio R., Peinado G., Torres J., Kremer C., Burrow R. "Structure of Cubic MOF $[\{Ca(H_2O)_6\}\{CaGd(oda)_3\}_2] \cdot 4H_2O$. A comparison between structural models obtained from Rietveld refinement of conventional and synchrotron x-ray powder diffraction data and standard refinement of single crystal x-ray diffraction data." **Powder Diffraction Journal (2012) 27(4), 232-242.**
69. Suescun L., Nespolo M. "From patterns to space groups and the eigensymmetry of crystallographic orbits: a reinterpretation of some symmetry diagrams in IUCr Teaching Pamphlet No. 14" **Journal of Applied Crystallography (2012), 45(4), 834-837.**
68. H. Perez Campos, M.C. Saldias, G. Sanchez, P. Martucci, M.C. Acosta, I. Alvarez, R. Faccio, L. Suescun, M. Romero, A. Mombru. "X Ray Diffraction: An Approach to Structural Quality of Biological Preserved Tissues in Tissue Banks", **Current Frontiers in Cryopreservation (2012) Chapter 22, 441-462 ISBN: 978-953-51-0302-8.**
67. Gómez N., Santos D., Vazquez R., Suescun L., Mombrú A.W., Vermeulen M., Finkielstein L, Shayo C., Moglioni A., Gambino D., Davio C., "Synthesis, structural characterization and pro-apoptotic activity of 1-indanone thiosemicarbazones and their platinum (II) and palladium (II) complexes: Potential role as selective antileukemic agents" **ChemMedChem (2011) 6(8), 1485-1494.**
66. Gateshki M., Suescun L., Kolesnik S., Mais J., Dabrowski B. "Crystal and magnetic structures of $AFe_{0.5}V_{0.5}O_3$ ($A=Y, Eu, Nd, La$) studied with neutron and x-ray powder diffraction between 30 and 700 K" **Journal of Solid State Chemistry (2011) 184, 2374-2380.**
65. Kremer C., Torres J., Suescun L., Faccio R., Mombrú A.W., Domínguez S. "Modulation of physicochemical properties of heteropolynuclear assemblies containing lanthanide ions and 2,2'-oxydiacetate". **Macromolecular Symposia (2011) 304, 72-79.**
64. Cuevas A., Kremer C., Suescun L., Mombrú A.W., Lloret F., Julve M., Fauss J. "Magneto-structural studies on heterobimetallic malonate-bridged $M^II Re^IV$ complexes ($M = Mn, Co, Ni$ and Cu)". **Dalton Transactions, (2010) 39(47), 11403-11411.**
63. Zając W., Suescun L., Świerczek K., Molenda J. "Structural and electrical properties of grain boundaries in $Ce_{0.85}Gd_{0.15}O_{1.925}$ solid electrolyte modified by addition of transition metal ions." **Journal of Power Sources (2009) 194, 2-9.**
62. Świerczek K., Dabrowski B., Suescun L., Kolesnik S. "Structural and magnetic study of $Sr_{1-x}La_xFe_{0.5}Co_{0.5}O_3$ ($0.1 \leq x \leq 0.5$) and $Sr_8Fe_4Co_4O_{23}$ " **J. Sol. State Chem. (2009) 182, 280-288.**
61. Suescun L., Dabrowski B., Mais J., Remsen S. "Synthesis and structural characterization of $La_xSr_{1-x}MnO_{2.6+\delta}$ ($0.1 < x < 0.4$) compounds showing unusual Jahn-Teller distortion of Mn^{3+} octahedra." **Journal of Solid State Chemistry (2009), 182, 187-195.**
60. Gateshki M., Suescun L., Kolesnik S., Mais J., Swierczek K., Short S., Dabrowski B. "Structural, magnetic and electronic properties of $LaNi_{0.5}Fe_{0.5}O_3$ in the temperature range 5 - 1000K" **Journal of Solid State Chemistry (2008), 181, 1833-1839.**
59. Pérez Campos H., Saldías M.C., Silva W., Machin D., Suescun L., Faccio R., Mombrú A.W., Alvarez I. "Control of cryopreservation procedures on blood vessels using fibre x-ray diffraction." **Transplantation Proceedings (2008) 40, 668-674.**
58. Suescun L., Dabrowski B. " $Sr_{4+n}Mn^{3+}_4Mn^{4+}_nO_{10+3n}$ A new homologous series of oxygen-vacancy-ordered perovskites built from $Mn^{3+}O_5$ pyramids and $Mn^{4+}O_6$ octahedra." **Acta Crystallographica Section B (2008) 64, 177-186.**

57. Suescun L., Dabrowski B., Mais J., Remsen S., Richardson Jr. J.W., Maxey E., Jorgensen J.D., "Phase transformations in $La_xSr_{1-x}MnO_y$ ($x = 0, 0.1, 0.2, 2.5 \leq y \leq 3$). An in-situ neutron powder diffraction study" **Chemistry of Materials (2008) 20, 1636-1645.**

Published reports or proceedings:

Suescun L., Peinado G., Faccio R., Torres J., Kremer C. "Characterization of water removal in two families of $Ln_2M_3(oda)_6(H_2O)_6 \cdot xH_2O$ MOFs." **LNLS – Activity Report 2011 (2012).**

Suescun L., Dabrowski B., Faccio R., Mombrú A.W., "Lattice distortions in oxygen deficient $SrMnO_y$ $2.8 < y < 3$ compounds with disordered vacancies." **LNLS – Activity Report 2008, (2009).**