

CV Date

29/07/2021

Part A. PERSONAL INFORMATION

First Name *	José Luis		
Family Name *	Tirado Coello		
Sex *	Male	Date of Birth *	
ID number Social Security, Passport *		Phone Number	(34) 957218637
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	Researcher ID	J-9904-2014	
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* Mandatory

A.1. Current position

Job Title	Catedrático de Universidad		
Starting date	2004		
Institution	Universidad de Córdoba		
Department / Centre			
Country		Phone Number	
Keywords			

A.3. Education

Degree/Master/PhD	University / Country	Year
Facultad de Ciencias	Universidad de Córdoba	1982
Licenciado en Ciencias Químicas	Universidad de Córdoba	1980

Part B. CV SUMMARY

José Luis Tirado Coello (JLT) completed his PhD in Chemistry in 1982, obtaining several awards, including the Tolsa on ceramic materials. He held a postdoctoral stay at the University of Cambridge (United Kingdom) and obtained a position as Associate Professor at the University of Córdoba (UCO) in 1986. He is currently Professor of Inorganic Chemistry and director of the research group "Chemistry and Electrochemistry of Inorganic Materials", Group FQM 288 of the Andalusian Research Plan (www.uco.es/investiga/grupos/QUEMI/). For more than twenty years, his research activity has been related to the field of inorganic materials for rechargeable batteries, with special emphasis on lithium ion and sodium batteries. JLT has led the UCO research group and/or coordinated several European research projects: JOU2-CT93-0326, ERB-CIPA-CT92-0131, ERB-CIPDCT94-0501, ENK6-CT2000-00082, ERB-FMBI-CT98-3020 and SES6-CT2003-503532, as well as projects of the National Materials Program MAT1994-1155-CE, MAT1999-0741, MAT2000-2721-CE, MAT2002-00434, MAT2005-00374, MAT2008-05880, MAT2011-22753, and an Excellence Project of the Andalusian Research Plan. It has also obtained financing through contracts with international companies, SAFT (France), Umicore (Belgium), Antolín group, Repsol (Madrid), ABENGOA research (Seville), etc. He was also one of the founding members of the European Network of Excellence ALISTORE, which led to the creation of the European Institute of the same name. He has enjoyed valuable collaborations with various international research groups, including the Universities of Marseille, Amiens-Joules Verne and Montpellier II (France), Kent and Manchester Universities (United Kingdom), Technical University of Darmstadt (Germany), Technological University of Delft (Netherlands), Institute of Chemistry General and Inorganic (Sofia, Bulgaria), Wentworth Institute of Technology (Boston, USA), Xiamen University (China), INCAR (Oviedo) and UCM and IMDEA (Madrid), among others. JLT's research activity has

produced an extensive scientific literature with around four hundred publications in international journals, some of them in high-impact journals, such as Mater. Sci. Eng. R (IF2020> 35), Energy Storage Mater. (IF2020>15) or Renew. Sust. En. Rev. and J. Mater. Chem. A (IF2020>12), numerous communications to international congresses, a significant percentage of invited conferences, patents, a book, and several chapters of books on batteries, etc. His publications have received more than 11000 citations and his h(SCOPUS)=56. He belongs to the Editorial Board of the Journal of Solid State Electrochemistry (Springer-Nature) since 2000. Regarding the training capacities of JLT, it should be noted that for twelve years he has been the director in Spain of the International Master "Materials for energy storage and conversion (MESC)", which enjoyed two periods of five years in the Erasmus Mundus program and was Coordinator of the PhD program of the University of Córdoba "Materials and Energy". JLT has directed more than 20 Doctoral Theses, among them the members of the research team of this project, four FPIs and some extraordinary prize and/or international mention. He also directed various national and international postdoctoral researchers, including a Marie Curie and two Ramón y Cajal. JLT has extended experience in expert panels and project evaluation in the European Commission, Spain, France, Switzerland, Ireland and USA Research Agencies.

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications.

AC: corresponding author. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper**. Lavela, P.; Klee, R.; Tirado, J.L.2021. On the benefits of Cr substitution on Na₄MnV(PO₄)₃ to improve the high voltage performance as cathode for sodium-ion batteries Journal of Power Sources. 495, pp.229811-229811. ISSN 0378-7753.
- 2 **Scientific paper**. Rubio, Saúl; Liang, Ziteng; Liu, Xiangsi; et al; Ortiz, Gregorio F.2021. Reversible Multi-Electron Storage Enabled by Na₅V(PO₄)₂F₂ for Rechargeable Magnesium Batteries Energy Storage Materials. 38, pp.462-472. ISSN 2405-8297.
- 3 **Scientific paper**. Criado, Ana; Lavela, Pedro; Tirado, José Luis; Pérez-Vicente, Carlos. 2020. Increasing Energy Density with Capacity Preservation by Aluminum Substitution in Sodium Vanadium Phosphate ACS Applied Materials & Interfaces. 12-19, pp.21651-21660.
- 4 **Scientific paper**. Odoom-Wubah, Tareque; Rubio, Saúl; Tirado, José L.; Ortiz, Gregorio F.; James Akoi, Bior; Huang, Jiale; Li, Qingbiao. 2020. Waste Pd/Fish-Collagen as anode for energy storage Renewable and Sustainable Energy Reviews. 131, pp.109968-109968. ISSN 1364-0321.
- 5 **Scientific paper**. Rubio, Saúl; Liu, Rui; Liu, Xiangsi; et al; Yang, Yong. 2019. Exploring the high-voltage Mg²⁺/Na⁺ co-intercalation reaction of Na₃VCr(PO₄)₃ in Mg-ion batteries J. Mater. Chem. A. The Royal Society of Chemistry. 7, pp.18081-18091.
- 6 **Scientific paper**. Cabello, Marta; Nacimiento, Francisco; Alcántara, Ricardo; Lavela, Pedro; Pérez Vicente, Carlos; Tirado, José L.2018. Applicability of Molybdenite as an Electrode Material in Calcium Batteries: A Structural Study of Layer-type CaxMoO₃ Chemistry of Materials. 30-17, pp.5853-5861.
- 7 **Scientific paper**. González, José R.; Alcántara, Ricardo; Tirado, José L.; Fielding, Alistair J.; Dryfe, Robert A. W.2017. Electrochemical Interaction of Few-Layer Molybdenum Disulfide Composites vs Sodium: New Insights on the Reaction Mechanism Chemistry of Materials. 29-14, pp.5886-5895.
- 8 **Scientific paper**. Klee, Rafael; Wiatrowski, Maciej; Aragón, María J.; Lavela, Pedro; Ortiz, Gregorio F.; Alcántara, Ricardo; Tirado, José L.2017. Improved Surface Stability of C+MxOy@Na₃V₂(PO₄)₃ Prepared by Ultrasonic Method as Cathode for Sodium-Ion Batteries ACS Applied Materials & Interfaces. 9-2, pp.1471-1478.
- 9 **Scientific paper**. Klee, Rafael; José Aragón, María; Lavela, Pedro; Alcántara, Ricardo; Luis Tirado, José. 2016. Na₃V₂(PO₄)₃/C Nanorods with Improved Electrode–Electrolyte Interface As Cathode Material for Sodium-Ion Batteries ACS Applied Materials & Interfaces. 8-35, pp.23151-23159.

- 10 **Scientific paper.** Cintora-Juarez, Daniel; Perez-Vicente, Carlos; Kazim, Samrana; Ahmad, Shahzada; Tirado, Jose Luis. 2015. Judicious design of lithium iron phosphate electrodes using poly(3,4-ethylenedioxythiophene) for high performance batteries J. Mater. Chem. A. The Royal Society of Chemistry. 3, pp.14254-14262.
- 11 **Scientific paper.** Aragon, Maria Jose; Vidal-Abarca, Candela; Lavela, Pedro; Tirado, Jose Luis. 2013. Improving the electrochemical performance of titanium phosphate-based electrodes in sodium batteries by lithium substitution J. Mater. Chem. A. The Royal Society of Chemistry. 1, pp.13963-13969.
- 12 **Scientific paper.** López, María C.; Ortiz, Gregorio F.; Lavela, Pedro; Tirado, José L.; Stoyanova, Radostina; Zhecheva, Ekaterina. 2013. Tunable Ti⁴⁺/Ti³⁺ Redox Potential in the Presence of Iron and Calcium in NASICON-Type Related Phosphates as Electrodes for Lithium Batteries Chemistry of Materials. 25-20, pp.4025-4035.
- 13 **Scientific paper.** Vidal-Abarca, C.; Lavela, P.; Aragon, M. J.; Plylahan, N.; Tirado, J. L. 2012. The influence of iron substitution on the electrochemical properties of Li_{1+x}Ti_{2-x}Fex(PO₄)₃/C composites as electrodes for lithium batteries J. Mater. Chem. The Royal Society of Chemistry. 22, pp.21602-21607.
- 14 **Scientific paper.** Nwokeke, Uche G.; Alcantara, Ricardo; Tirado, Jose L.; Stoyanova, Radostina; Yoncheva, Meglena; Zhecheva, Ekaterina. 2010. Electron Paramagnetic Resonance, X-ray Diffraction, Mossbauer Spectroscopy, and Electrochemical Studies on Nanocrystalline FeSn₂ Obtained by Reduction of Salts in Tetraethylene Glycol Chemistry of Materials. 22-7, pp.2268-2275.
- 15 **Scientific paper.** Ortiz, Gregorio F.; Hanzu, Ilie; Djenizian, Thierry; Lavela, Pedro; Tirado, Jose L.; Knauth, Philippe. 2009. Alternative Li-Ion Battery Electrode Based on Self-Organized Titania Nanotubes Chemistry of Materials. 21-1, pp.63-67.
- 16 **Scientific paper.** Ortiz, Gregorio F.; Hanzu, Ilie; Knauth, Philippe; Lavela, Pedro; Tirado, Jose L.; Djenizian, Thierry. 2009. TiO₂ nanotubes manufactured by anodization of Ti thin films for on-chip Li-ion 2D microbatteries Electrochimica Acta. 54-17, pp.4262-4268.
- 17 **Scientific paper.** Lavela, P.; Tirado, J. L. 2007. CoFe₂O₄ and NiFe₂O₄ synthesized by sol-gel procedures for their use as anode materials for Li ion batteries Journal of Power Sources. 172-1, pp.379-387.
- 18 **Scientific paper.** Alcantara, R; Ortiz, GF; Lavela, P; Tirado, JL. 2006. EPR, NMR, and electrochemical studies of surface-modified carbon microbeads Chemistry of Materials. 18-9, pp.2293-2301.
- 19 **Scientific paper.** Alcantara, R.; Lavela, P.; Ortiz, G. F.; Tirado, J. L. 2005. Carbon microspheres obtained from resorcinol-formaldehyde as high-capacity electrodes for sodium-ion batteries Electrochemical and Solid State Letters. 8-4, pp.A222-A225.
- 20 **Scientific paper.** Aldon, L.; Kubiak, P.; Womes, M.; Jumas, J. C.; Olivier-Fourcade, J.; Tirado, J. L.; Corredor, J. I.; Vicente, C. P. 2004. Chemical and electrochemical Li-insertion into the Li₄Ti₅O₁₂ spinel Chemistry of Materials. 16-26, pp.5721-5725.
- 21 **Scientific paper.** Alcantara, R; Jaraba, M; Lavela, P; Tirado, JL. 2003. Electrochemical, Li-6 MAS NMR, and X-ray and neutron diffraction study of Li_{1-x}Co_xFeyMn_{2-(x+y)}O₄ spinel oxides for high-voltage cathode materials Chemistry of Materials. 15-5, pp.1210-1216.
- 22 **Scientific paper.** Tirado, J. L. 2003. Inorganic materials for the negative electrode of lithium-ion batteries: state-of-the-art and future prospects Materials Science & Engineering R-Reports. 40-3, pp.103-136.
- 23 **Scientific paper.** Monconduit, L; Jumas, JC; Alcantara, R; Tirado, JL; Vicente, CN. 2002. Evaluation of discharge and cycling properties of skutterudite-type Co_{1-2y}FeyNiySb₃ compounds in lithium cells Journal of Power Sources. 107-1, pp.74-79.
- 24 **Scientific paper.** Alcantara, R.; Jaraba, M.; Lavela, P.; Tirado, J. L. 2002. NiCo₂O₄ spinel: First report on a transition metal oxide for the negative electrode of sodium-ion batteries Chemistry of Materials. 14-7, pp.2847-+.
- 25 **Scientific paper.** Alcantara, R.; Jimenez-Mateos, J. M.; Lavela, P.; Tirado, J. L. 2001. Carbon black: a promising electrode material for sodium-ion batteries Electrochemistry Communications. 3-11, pp.639-642.

- 26 Scientific paper.** Alcantara, R.; Madrigal, F. J. F.; Lavela, P.; Tirado, J. L.; Mateos, J. M. J.; de Salazar, C. G.; Stoyanova, R.; Zhecheva, E. 2000. Characterisation of mesocarbon microbeads (MCMB) as active electrode material in lithium and sodium cells Carbon. 38-7, pp.1031-1041.

C.3. R&D and innovation projects and contracts

- 1 Project.** Búsqueda de baterías seguras y sostenibles basadas en los conceptos Na-ion, Mg e híbrido. Gregorio Ortiz Jiménez. (Universidad de Córdoba). 01/01/2018-31/12/2020. 121.000.
- 2 Project.** Baterías post ion-Li: del sodio al aluminio. Pedro Lavela Cabello. (Universidad de Córdoba). 01/01/2015-31/12/2017. 150.000.
- 3 Project.** Hacia una batería ion-Li de estado sólido: materiales nanoestructurados obtenidos por vía electroquímica (MAT2011-22753). CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA. José Luis Tirado Coello. (Universidad de Córdoba). 01/01/2012-30/06/2015. 280.000.
- 4 Project.** Oxisales para los electrodos de inserción/conversión de baterías avanzadas de ión litio e ión sodio (MAT2008-05880). José Luis Tirado Coello. (Universidad de Córdoba). 01/01/2009-31/12/2011. 249.260.
- 5 Project.** RYC-2010-05596, Nanomaterials for Li-ion Batteries based on architected electrode designs. Ramón y Cajal. From 01/12/2010.
- 6 Project.** MAT2008-05880/MAT, OXISALES PARA LOS ELECTRODOS DE INSERCIÓN/CONVERSIÓN DE BATERIAS AVANZADAS DE IÓN LITIO E IÓN SODIO. OTROS PROGRAMAS DEL PLAN NACIONAL I+D, MINISTERIO DE CIENCIA Y TECNOLOGÍA. JOSE LUIS TIRADO COELLO. From 01/01/2009. 249.260.
- 7 Project.** P06-FQM-01447, PREPARACIÓN DE NANOMATERIALES PARA LAS BATERÍAS DE IÓN LITIO MEDIANTE EL USO DE MICELAS INVERSAS. PROYECTOS DE EXCELENCIA, JUNTA DE ANDALUCÍA. JOSE LUIS TIRADO COELLO. From 01/05/2007. 217.999,88.
- 8 Project.** SES6-CT2003-503532, ADVANCED LITHIUM ENERGY STORAGE SYSTEM BASED ON THE USE OF NANO-POWDERS AND NANO-COMPOSITES ELECTRODES/ELECTROLYTES. IV PROGRAMA MARCO DE LA UNIÓN EUROPEA, COMISIÓN EUROPEA. JOSE LUIS TIRADO COELLO. From 01/01/2004. 144.424.
- 9 Project.** ENK6-CT2000-00082, New generation of Lithium-ion accumulators (NEGELIA). IV PROGRAMA MARCO DE LA UNIÓN EUROPEA, COMISIÓN EUROPEA. JOSE LUIS TIRADO COELLO. From 01/11/2000. 258.019.
- 10 Project.** JOU2-CT93-0326, MATERIALS FOR HIGH PERFORMANCE ROCKING-CHAIR BATTERIES. III PROGRAMA MARCO DE LA UNIÓN EUROPEA, COMISIÓN EUROPEA. JOSE LUIS TIRADO COELLO. From 01/01/1994. 100.000. Co-ordinator.
- 11 Contract.** Nuevos materiales fosfatos para los cátodos de baterías de metales alcalinos de alto rendimiento ABENGOA RESEARCH. Shahzada Ahmad. 01/09/2012-01/09/2015. 115.000 €.
- 12 Contract.** MATERIALES DE CARBONO COMO ÁNODOS PARA BATERÍAS IÓN-LITIO Instituto Nacional del Carbón. JOSE LUIS TIRADO COELLO. 01/01/2002-31/12/2003. 15.000 €.

C.4. Activities of technology knowledge transfer and results exploitation

- 1** Daniel Cíntora Juárez; Shahzada Ahmad; Carlos Pérez Vicente; José Luis Tirado Coello; Samrana Kazim; Manuel Doblaré Castellano. WO 2015/082711 A1. Alkali Ion Battery and Method for Producing the Same Spain. 11/06/2015. ABENGOA RESEARCH S.L..
- 2** José Luis Tirado Coello; Pedro Lavela Cabello; Carlos Pérez Vicente; Ricardo Alcántara Román; Bernardo León Mohedano; María José Aragón Algrá. WO2011/124644 A1. Composite negative material comprising a transition metal malonate United States of America. 13/10/2011. Universidad de Córdoba.