Andrés Paul Sarmiento Cajamarca

PERSONAL DATA
Andrés Paul Sarmiento Cajamarca. ID: 010499200-3
Date of birth: 09 Feb 1989, Ecuadorian citizen
Department of Mechanical Engineering / UFSC
Florianópolis, Santa Catarina, BRAZIL.
CV Lattes: http://lattes.cnpq.br/2065376202795572

Telephone: (+55) 48 99133 0951
e-mail: apsarmientoc@gmail.com
andres@labtucal.ufsc.br

EDUCATION **Federal University of Santa Catarina** — Florianópolis, Santa Catarina, BRAZIL

Ph.D. student in Mechanical Engineering with specialization in Thermal Sciences and Engineering - Department of Mechanical Engineering - Heat Pipe Laboratory – LABTUCAL. Dissertation title: Two-phase heat transfer and pressure drop in chaotic compact heat exchangers.

Start: August 2016. End: August 2020 (expected).
Adviser: Prof. Márcia B. H. Mantelli, Ph. D. Co-adviser: Prof. Fernando H. Milanese, Dr. Eng.

Master of Science in Mechanical Engineering with specialization in Thermal Sciences and Engineering - Department of Mechanical Engineering - Heat Pipe Laboratory – LABTUCAL. Thesis title: Theoretical analysis of thermosyphon shell and shell heat exchanger (in Portuguese).

Start: March 2014. End: June 2016.
Adviser: Prof. Fernando H. Milanese, Dr. Eng. Co-adviser: Prof. Márcia Mantelli, Ph. D.

Universidad Politécnica Salesiana — Cuenca, Azuay, ECUADOR

Mechanical Engineer - Department of Mechanical Engineering - Laboratory of Instrumentation Engineering.

Start: September 2006. End: May 2013.
Adviser: Prof. René Vinicio Sánchez, Ph. D

Instituto Técnico Superior Salesiano — Cuenca, Azuay, ECUADOR

Bachiller in Industrial Mechanics

Start: September 2000. End: July 2006.
Adviser: Eng. Boris Espinoza Cisneros

RESEARCH INTEREST
Heat pipe and thermosyphons. Heat exchangers and compact heat exchangers. Computational Fluid Dynamics and Numerical Methods. Convective Boiling and Condensation. Computational Multiphase Flow.

RELATED EXPERIENCE **Federal University of Santa Catarina** — Florianópolis, Santa Catarina, BRAZIL

Doctoral research assistant **August 2016 - current**

- Heat Pipe Laboratory (LABTUCAL/LEPTEN), Department of Mechanical Engineering: Experimental and theoretical models for two-phase flow in non - straight minichannels.
- The main goal of this work is to develop a experimental and numerical evaluation of two - phase heat transfer and fluid flow for non - straight minichannels to be used in compact heat exchangers. This research project is funded by Petrobras.

Teaching assistant **August 2017 - December 2017**

- Undergraduate Program on Mechanical Engineering: Heat Transfer. Teaching assistant for Prof. Márcia Mantelli, Ph. D.

Teaching assistant **July 2017 - September 2017**

- Graduate Program on Mechanical Engineering (POSMEC): Theoretical Aspects on Heat Pipes and Thermosyphons. Teaching assistant for Prof. Márcia Mantelli, Ph. D.

Master research assistant   **March 2014 - June 2016**

- Heat Pipe Laboratory (Labtucal/Lepten), Department of Mechanical Engineering: Developing of technologies for heat exchangers (Ttter).
- In this work was developed a numerical model for thermal coupling of thermosyphons used in heat exchangers. This research project was funded by Petrobras.

Universidad Politécnica Salesiana — Cuenca, Azuay, Ecuador

Teaching assistant   **August 2011 - September 2011**

- Institute of Physical Sciences and Mathematics (ICFM): Algebra 1 and 2; Geometric and Trigonometric 1 and 2. Pre-college course.

Teaching assistant   **September 2011 - February 2012**

- Department of Mechanical Engineering: Pneumatics and Hydraulics, Industrial Automation 1 and 2.

Teaching assistant   **March 2012 - July 2012**

- Department of Mechanical Engineering: Thermodynamics 1 and 2, Industrial Automation 2.

Research assistant   **March 2012 - June 2013**

- Research assistant, Research Group in New Materials, Department of Mechanical Engineering: Characterization and properties improvement of *Carludovica Palmata* (Paja Toquilla).
- This research project was funded by Universidad Politécnica Salesiana.

Research assistant   **March 2012 - July 2013**

- Research assistant, Laboratory of Instrumentation Engineering: Design and implementation of four industrial instrumentation bench.
- This research project was funded by Universidad Politécnica Salesiana.

Servicio Ecuatoriano de Capacitación Profesional (SECAP) — Cuenca, Azuay, Ecuador

Instructor   **September 2011 - October 2011**

- Instructor in the Servicio Ecuatoriano de Capacitacion Profesional - SECAP.
- In this institute, I worked as Mathematics and Geometry teacher.

Journal reviewer

Ingenius: Revista de Ciencia y Tecnologia   **August 2016 - current**

Work experience

Instituto Nacional de Eficiencia Energética y Energías Renovables — Cuenca, Azuay, Ecuador

Engineer research   **June 2013 - February 2014**

- In this project was proposed statistical methods for quality control of meteorological data that will be used on the estimation of solar and wind renewable energy capacity.
- This project was granted by Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación – SENESCYT of Ecuadorian Goverment.

Cerámicas y Porcelanatos: Graiman — Cuenca, Azuay, Ecuador

Internship   **August 2010 - September 2010**

- Design and calculus of Fire Protection System

Continental Tire Andina — Cuenca, Azuay, Ecuador

Maintenance assistant	**December 2008 - January 2009**

  - Mechanical maintenance: Power Plant / Boilers

Maintenance assistant	**December 2012 - January 2013**

  - Mechanical maintenance: Power Plant / Engines

Awards

- Scholarship for Ph. D. studies. CAPES - PROEX, Brazil. September 2016 - August 2020.
- Scholarship for MSc. studies. CAPES - PROEX, Brazil. March 2014 - March 2016.
- Outstanding Studies (OS) Award. Instituto Técnico Superior Salesiano, Ecuador. 2005
- Outstanding Studies (OS) Award. Instituto Técnico Superior Salesiano, Ecuador. 2004

Language

- Spanish. Writing (C2), Read (C2), Speak (C2), Understand (C2), mother tongue.
- Portuguese. Writing (C1), Read (C2), Speak (C2), Understand (C2).
- English. Writing (B1), Read (B1), Speak (B1), Understand (B1).
*CEFRL scale.

Seminars participation

National Institute for Space Research - INPE / LIT

- Analysis requirements and writing specifications. Eng. Robert Halligan (PPI), São José dos Campos, SP - Brazil. June - 2016. (40 hours).

Engineering Simulation and Scientific Software - ESSS

- Introduction to optimization techniques (in Portuguese). Ms. C. Guilherme Jenovencio (ESSS), Florianópolis, SC - Brazil. March - 2015.

Federal University Santa Catarina

- Heat Pipes and Energy Technologies. Prof. Dr. Manfred Groll (University of Stuttgart), Florianópolis, SC - Brazil. August - 2014. (20 hours).

Universidad Politécnica Salesiana

- Scientific writing (in Spanish). Prof. Diana Paola Jaramillo, Ph. D. (Universitat Autònoma de Barcelona) April - 2013. (20 hours).
- Design of Experiments (in Spanish). Prof. Luis Ortiz, Ph. D. (Universidad de Cuenca), July - 2012. (32 hours).
- Introduction to scientific writing (in Spanish). Prof. Julio César Viola, Ph. D. (Universidad Simón Bolívar), March - 2012 (20 hours).
- Boiler maintenance (in Spanish). Prof. Bolivar Bernal, Dr. (Universidad de Cuenca), August - 2011. (80 hours).
- Introduction to metallography of metals (in Spanish). Prof. Wilson Calle, Ms. C. (Universidad Politécnica Salesiana), February - 2009. (32 hours).

Dictated seminars

Federal University Santa Catarina — Florianópolis, Santa Catarina, Brazil

- Introduction to numerical analysis with ANSYS CFX (in Portuguese), October - 2016. (6 hours), with Eng. L. H. R. Cisterna. Ms. C. Heat Pipe Laboratory.
- Introduction to numerical analysis with ANSYS Fluent (in Portuguese), October - 2017. (6 hours). Heat Pipe Laboratory.

Universidad Politécnica Salesiana — Cuenca, Azuay, Ecuador

- Introduction to Pneumatics (in Spanish), September - 2011. (32 hours), with Prof. René Vinicio Sánchez, Ms. C, Ph. D
- Introduction to Hydraulics and Electro hydraulics (in Spanish), February - 2012. (32 hours), with Prof. René Vinicio Sánchez, Ms. C, Ph. D
- Introduction to LaTeX and LyX (in Spanish), May - 2012. (20 hours).
- Documents preparation using LaTeX2$_\epsilon$ and LyX (in Spanish), November - 2012. (32 hours).
- As part of final undergraduate project, I collaborated in four mini workshops in Industrial Instrumentation (in Spanish):

- Electronics Engineering Career, Universidad Politécnica Salesiana, headquarters Cuenca. Cuenca - Ecuador. November - 2012. (25 hours).
- Industrias Guapán (Cement industry). Cuenca - Ecuador. November 2012. (20 hours).
- Electronics and Electrical Engineering Career, Universidad Politécnica Salesiana at Quito. Cuenca - Ecuador. December - 2012. (20 hours).
- Industry personnel from The City of Cuenca. Cuenca - Ecuador. January - 2013. (20 hours).

PUBLICATIONS

JOURNAL PAPERS

- V. R. Miranda, <u>A. P. C. Sarmiento</u>, F. H. Milanese, M. B. H. Mantelli. "Experimental and theoretical studies on shell and thermosyphon heat exchangers," in writing process, 2018.
- L. M. López, <u>A. P. C. Sarmiento</u>, J. I. Fajardo, Luis E. Valarezo, R. Zuluaga, "Determinación del porcentaje de humedad, solubles e insolubles en agua de la fibra de Carludovica Palmata (Paja Toquilla)," *Ingenius: Revista de Ciencia y Tecnología*, p. 23-27, June 2013.
- J. M. Barbecho, <u>A. P. Sarmiento</u>, R. V. Sánchez, W. P. Calle, "Diseño e implementación de un Laboratorio de Instrumentación Industrial," *Ingenius: Revista de Ciencia y Tecnología*, p. 65-71, June 2013.
- J. I. Fajardo, L. E. Valarezo, L. M. López, <u>A. P. Sarmiento</u>, "Experiencies in obtaining polymeric composites reinforced with natural fiber from Ecuador," *Ingenius: Revista de Ciencia y Tecnología*, p. 28-35, June 2013.

CONFERENCE PAPERS

- <u>A. P. C. Sarmiento</u>, G. Maccari, F. H. Milanese, M. B. H. Mantelli. "A computational study of the hydrodynamic developing region in single-phase minichannels," to be presented to *ENCIT 17th Brazilian Congress of Thermal Sciences and Engineering*, Águas de Lindóia, SP, Brazil 2018.
- <u>A. P. C. Sarmiento</u>, L. H. R. Cisterna, F. H. Milanese, M. B. H. Mantelli. "A numerical method for shell and thermosyphon heat exchanger analysis," to be presented to *X Minsk International Seminar "Heat Pipes, Heat Pumps, Refrigerators, Power Sources"*, Minsk, Belarus, September 2018.
- <u>A. P. C. Sarmiento</u>, L. H. R. Cisterna, M. V. V. Mortean, M. B. H. Mantelli, A. Dias and L. B. Gheno. "Risk analysis of thermosyphon assisted drying air heating system," *23rd ABCM International Congress of Mechanical Engineering*, Rio de Janeiro, RJ, Brazil, December 2015.
- J. M. Barbecho, <u>A. P. Sarmiento</u>, R. V. Sánchez, W. P. Calle. "Diseño e implementación de tres bancos didácticos de instrumentación industrial para la medición de fuerza - desplazamiento y temperatura," in *XI Congreso Iberoamericano de Ingeniería Mecánica*, La Plata, Argentina, 2013, pp. 5.
- P. M. Sarmiento, L. M. López, <u>A. P. Sarmiento</u>, and J. I. Fajardo. "Efficiency of the low-pressure cold plasma in the cleaning of steel sheet for subsequent covering," in *Andean Region International Conference*, IEEE. Cuenca, Ecuador: IEEE Computer Society, 2012, pp. 115-118.

THESIS / DISSERTATION

- A. P. C. Sarmiento "Theoretical analysis of thermosyphon shell-and-shell heat exchangers (in Portuguese)," Master thesis, Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil, 2016.

BOOKS

- A. P. C. Sarmiento "An comprehensive and practical introduction to LaTeX (in Spanish)," in writing process, Cuenca, Ecuador, 2018.

SKILLS:
SOFTWARE

Programming
- Lisp, MATLAB, Visual Basic.

CAD-CAM
- AutoCAD 2D - 3D, AutoCAD Mechanical 2D - 3D, Autodesk Inventor. MasterCAM, CIMCO.

Numerical simulation
- Ansys CFX, Ansys Fluent

Hydraulics simulation
- Pipe Flow, EPANET.
- Automatiom Studio, Festo Fluidsim Pneumatics and Hydraulics.

Productivity applications
  - TeX and LaTeX intermediate - advanced user.
  - Developer of template for Department of Mechanical Engineering based on ABNTeX1, Universidad Politécnica Salesiana, v1,2 (no longer updated).
  - Developer of INGENIUS Journal template, Universidad Politécnica Salesiana, v0.1 – v0.4.1 (no longer updated).
  - Developer of Laboratory of Instrumentation template, Universidad Politécnica Salesiana, v1.2 (no longer updated).
  - Developer of template for Department of Mechanical Engineering based on ABNTeX2, Federal University of Santa Catarina, v3.2 (current version).
  - Microsoft Word, Microsoft Excel, Microsoft Power Point, Open Office.

Operating systems
  - Microsoft Windows, Ubuntu, Kubuntu.

COURSES

Graduate Level at UFSC:
  - Heat convection. Heat and mass diffusion. Heat pipe and thermosyphons: theoretical aspects. Ordinary Differential Equations. Partial Differential Equations. Computational Fluid Dynamics. Numerical Methods for Engineering. Fundamentals of Statistics and Metrology. Radiative Heat Transfer. Fundamentals of Fluid Mechanics. Fundamentals of Boiling and Condensation. Convective Boiling and Condensation. Fundamentals of Thermodynamics. Additive Manufacturing. Experimental Thermal Sciences. Design of Experiments.

SERVICE

  - Drummer and percussionist in Nuestra Señora de Fátima Church, Cuenca, Azuay, Ecuador (2008 - 2014).
  - Drummer in Santissima Trindade Church, Florianopolis, Santa Catarina, Brazil (October 2017 - Current).

REFERENCES AVAILABLE FOR CONTACT

Prof. Vinicio Sánchez L. Ph.D (e-mail: rsanchezl@ups.edu.ec)
  • Professor, Department of Mechanical Engineering, Universidad Politécnica Salesiana.

Prof. Jorge Fajardo S. Ms.C, Ph.D (c) (e-mail: jfajardo@ups.edu.ec)
  • Professor, Department of Mechanical Engineering, Universidad Politécnica Salesiana.

Prof. John Calle S. Ms.C, Ph.D (c) (e-mail: jcalle@ups.edu.ec)
  • Professor, Department of Mechanical Engineering, Universidad Politécnica Salesiana.

Eng. Diego Vaca. Ms.C, Ph.D (c) (e-mail: dvaca3@gatech.edu)
  • Ph.D student in Mechanical Engineering at Georgia Institute of Technology.

Prof. Márcia Barbosa Henriques Mantelli. Ph.D (e-mail: marcia@labtucal.ufsc.br)
  • Head of Heat Pipe Laboratory (LABTUCAL/LEPTEN), Federal University of Santa Catarina.

Prof. Fernando Henrique Milanese. Dr. Eng (e-mail: milanese@labtucal.ufsc.br)
  • Heat Pipe Laboratory (LABTUCAL/LEPTEN), Federal University of Santa Catarina.

Eng. Juan Pablo Florez Mera. Dr. Eng (e-mail: jpablo@labtucal.ufsc.br)
  • Heat Pipe Laboratory (LABTUCAL/LEPTEN), Federal University of Santa Catarina.