Curriculum Vitae

Notarization. I have read the following and certify that this *curriculum vitae* is a current and accurate statement of my professional record.

Signature  Date 03/09/2021

I. Personal Information

UID: 112209865 , Fernandes Bacellar, Daniel
9613 Dallas Ave. Silver Spring, MD 20901
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www.linkedin.com/in/daniel-bacellar-3b352216

I.A. Academic Appointments at UMD

Center for Environmental Energy Engineering (CEEE), Department of Mechanical Engineering at the University of Maryland - College Park, MD (www.ceee.umd.edu)

Faculty Research Associate 04/2020 – Present

- Identify new research and funding opportunities
- Provide technical and management support to both government and private funded research
- Mentoring of graduate students
- Co-lecture graduate courses

Center for Environmental Energy Engineering (CEEE), Department of Mechanical Engineering at the University of Maryland - College Park, MD (www.ceee.umd.edu)

Graduate Research Assistant (GRA) 05/2012 – 12/2016

- Develop multi-scale analysis and shape optimization methodology for finless gas-to-fluid heat exchangers
- Develop codes for automated CFD simulations and optimization framework
- Perform data analysis & data reduction
- Experimental validation a 3D printed prototype heat exchanger
- Develop a transient vapor compression cycle model library

I.B. Other Employment

Optimized Thermal Systems, Inc. – Beltsville, MD
(www.optimizedthermalsystems.com)
Engineering Manager 04/2017 – 03/2020

- Manage and lead projects aiming high-efficiency and reduced costs & environmental impact on HVAC&R systems
- Manage team of engineers
- Interact directly with clients on a frequent basis
- Perform Design & Optimization of components and systems
- Oversee heat exchanger / system testing

- Perform data analysis & data reduction
- Solve problems and make decisions often under aggressive schedule
- Prepare project proposals for industrial clients, research institutions and government awards

CFD and Thermal Systems Optimization Engineer 12/2016 – 04/2017

- Perform Design & Optimization of components and systems
- Perform data analysis & data reduction
- Solve problems often under aggressive schedule

FIGENER, LLC - Sao Paulo, Brazil (www.figener.com.br/en/)
Mechanical Engineer – Consultant 02/2010 - 04/2012

Develop solutions for energy consumption & overall costs reduction in general industrial processes including but not limited to HVAC&R, power generation, chemical plants and food production.

I.C. Educational Background

University of Maryland College Park
Doctor of Philosophy (Ph.D.) in Mechanical Engineering - 2012-2016 (GPA: 3.7)
Dissertation title: Airside Passive Heat Transfer Enhancement, Using Multi-Scale Analysis and Shape Optimization, For Compact Heat Exchangers with Small Characteristic Lengths

Universidade de Sao Paulo (Brazil)
B.S. in Mechanical Engineering – 2006-2010
Dissertation title: Exergy and Thermoeconomic Analysis of the Combined Distillation of a Petroleum Refinery

II. Research, Scholarly, Creative and/or Professional Activities

II.A. Refereed Journals

II.A.1. Refereed Journal Articles

Zhiwei Huang , Jiazhen Ling , Daniel Bacellar , Yunho Hwang , Vikrant Aute , Reinhard Radermacher (2019) Airside thermal and hydraulic characteristics of compact bare tube heat exchanger under dry and wet conditions, International Journal of Refrigeration, 110, 295-307

Daniel Bacellar, Vikrant Aute, Zhiwei Huang & Reinhard Radermacher (2017) Design optimization and validation of high-performance heat exchangers using approximation assisted optimization and additive manufacturing, Science and Technology for the Built Environment, 23:6, 896-911

Daniel Bacellar, Vikrant Aute, Zhiwei Huang & Reinhard Radermacher (2016) Airside friction and heat transfer characteristics for staggered tube bundle in crossflow configuration with diameters from 0.5 mm to 2.0 mm International Journal of Heat and Mass Transfer, 98, 448-454

Long Huang, Daniel Bacellar, Vikrant Aute & Reinhard Radermacher (2015) Variable geometry microchannel heat exchanger modeling under dry, wet, and partially wet surface conditions accounting for tube-to-tube heat conduction, Science and Technology for the Built Environment, 21:5, 703-717

II.A.2. Invited Reviews of Journal Articles
Applied Mathematical Modelling; IF (5-year):3.370 (https://www.journals.elsevier.com/applied-mathematical-modelling)
Energies; IF (5-year): 2.822 (https://www.mdpi.com/journal/energies)
Engineering with Computers; IF (5-year): 3.211 (https://www.springer.com/journal/366)
Fluids; IF (5-year in 2017): 3.176 (https://www.mdpi.com/journal/fluids)
Sensors; IF (5-year): 3.427 (https://www.mdpi.com/journal/sensors)
Water; IF (5-year): 2.709 (https://www.mdpi.com/journal/water)

II.B. Published Conference Proceedings

II.B.1. Refereed Conference Proceedings

Li, Song; Bacellar, Daniel; Martin, Cara; Lee, Colin; Beaini, Sara; Leverette, James. Experimental Evaluation of Frost Development on Tube-Fin Heat Exchangers: Fin Types, Fin Densities, (Super)hydrophobic and Icephobic Coatings. ASHRAE Virtual Winter Conference, February 9-11, 2021.

Bacellar, D., Aute, V., Huang, Z. Radermacher, R., Novel Airside Heat Transfer Surface Designs Using an Integrated Multi-Scale Analysis with Topology and Shape Optimization, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016

Bacellar, D., Aute, V., Huang, Z. Radermacher, R, Airside Performance Correlations and Optimal Heat Pump Heat Exchanger Designs Based on 0.5mm-2mm Finless Round Tube Bundles, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016

Bacellar, D., Aute, V., Radermacher, R., Performance Evaluation Criteria Analysis of Compact Air-to-Refrigerant Heat Exchangers and Selection Utility Function for Single Phase Applications, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016

Bacellar, D., Aute, V., Radermacher, R., Wavy Fin Profile Optimization Using NURBS for Air-To-Refrigerant Tube-Fin Heat Exchangers with Small Diameter Tubes, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016

Bacellar, D., Aute, V., Radermacher, R., CFD-Based Correlation Development for Air Side Performance of Wavy Fin Tube Heat Exchangers using Small Diameter Tubes, 16th International Refrigeration and Air Conditioning Conference at Purdue, July 11-14, 2016

Bacellar, D., Aute, V., Radermacher, R., CFD-Based Correlation Development for Air Side Performance of Finned and Finless Tube Heat Exchangers with Small Diameter Tubes,

15th International Refrigeration and Air Conditioning Conference at Purdue, July 14-17, 2014

Bacellar, D., Ling, J., Abdelaziz, O., Aute, V., Radermacher, R., Multi-scale modeling and approximation assisted optimization of bare tube heat exchangers, Proceedings of the 15th International Heat Transfer Conference, IHTC-15, August 10-15, 2014, Kyoto, Japan

Bacellar, D., Abdelaziz, O., Aute, V., Radermacher, R., Novel Heat Exchanger Design using Computational Fluid Dynamics and Approximation Assisted Optimization, ASHRAE 2015, Winter Conference, January 24-28, 2015 - Chicago, IL

Bacellar, D., Aute, V., Radermacher, R., A Method for Air-To-Refrigerant Heat Exchanger Multi-Scale Analysis and Optimization with Tube Shape Parameterization, 24th IIR International Congress of Refrigeration, August 16 – 22, 2015 – Yokohama, Japan

Bacellar, D., Aute, V., Radermacher, R., CFD-Based Correlation Development for Air Side Performance on Finned Tube Heat Exchangers with Wavy Fins and Small Tube Diameters, 24th IIR International Congress of Refrigeration, August 16 – 22, 2015 – Yokohama, Japan

Huang, L. Bacellar, D., Aute, V., Radermacher, R., Fin Performance Analysis for Microchannel Heat Exchangers Under Dry, Wet and Partial Wet Conditions, 15th International Refrigeration and Air Conditioning Conference at Purdue, July 14-17, 2014

Saleh, K., Bacellar, D., Aute, V., Radermacher, R., An Adaptive Multiscale Approximation Assisted Multiobjective Optimization Applied to Compact Heat Exchangers, 4th International Conference of Engineering Optimization, EngOpt 2014, September 8-11, Lisbon, Portugal

Viren Bhanot, Daniel Bacellar, Jiazhen Ling, Abdullah Alabdulkarem, Vikrant Aute & Reinhard Radermacher (2014) Steady State and Transient Validation of Heat Pumps Using Alternative Lower-GWP Refrigerants. International Refrigeration and Air Conditioning Conference

II.B.2. Accepted Conference Publications between 2019 and 2020

Lee, Colin; Hess, Evan; Beaini, Sara; Li, Song; Bacellar, Daniel; Nasuta, Dennis; Martin, Cara. Durability and Performance Evaluations of SuperHydrophobic and Icephobic Coatings for Tube-Fin Heat Exchangers *(International Refrigeration and Air Conditioning Conference at Purdue)*

Carow, Jim; Bacellar, Daniel; Martin, Cara. Performance Analysis of Ejector Cycles for Separate Sensible and Latent Cooling in Air Conditioning *(International Refrigeration and Air Conditioning Conference at Purdue)*

Li, Song; Carow, James; Bacellar, Daniel; Martin, Cara. Comparative Studies of Scroll and Rotary Compressors for US Market Heat Pumps and Air Conditioners *(International Refrigeration and Air Conditioning Conference at Purdue)*

Bacellar, Daniel; Li, Song; Martin, Cara; Powell, Dale. Design Optimization of 3mm and 5mm Copper Tube and Flat Fin Air-to-Water Heat Exchangers with Experimental Validation *(International Refrigeration and Air Conditioning Conference at Purdue)*

Rhoads, Adam; Bacellar, Daniel; Martin, Cara; Waser, Remo; Zaglio, Maurizio; Stillman, Hal. Quasi Steady-State Modeling Approach for Low Computational Cost Design Optimization of Heat Exchangers for Phase Change Material (PCM) Thermal Batteries *(International Refrigeration and Air Conditioning Conference at Purdue)*

Bacellar, Daniel; Li, Song; Martin, Cara; Shabtay, Yoram; Black, John. Evaluation of Contact Resistance and Fin Effectiveness of Enhanced, Brazed "Dogbone" Fin and Serpentine Tube Heat Exchangers for Air Conditioning and Heat Pump Applications *(International Refrigeration and Air Conditioning Conference at Purdue)*

Bacellar, Daniel; Alam, Tanjebul; Ling, Jiazhen; Aute, Vikrant. A Study on Computational Cost Reduction of Simulations of Phase-Change Material (PCM) Embedded Heat Exchangers *(International Refrigeration and Air Conditioning Conference at Purdue)*

Alam, Tanjebul; Bacellar, Daniel; Ling, Jiazhen; Aute, Vikrant. Numerical study and Experimental Validation of melting and solidification in PCM embedded heat exchangers with straight and helical tubes *(International Refrigeration and Air Conditioning Conference at Purdue)*

D. Bacellar, T. Alam, J. Ling, V. Aute. Automated Parameterized CFD Simulations of Phase-Change Material Embedded Heat Exchangers. ITherm 2021 - The Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems, June 1 - June 4, 2021

J. Yang, J. Muehlbauer, D. Bacellar, J. Ling, V. Aute, Y. Hwang. Experimental and Numerical Investigation of Melting and Solidification Processes of Phase Change Material Heat Exchangers. 13th IIR Phase Change Materials and Slurries for Refrigeration and Air Conditioning Conference

II.B.3 Patents

Heat Exchanger Fin - U.S. patent application number 20190285359 16/352298. Rheem Manufacturing Company. Daniel Bacellar, Govinda Mahajan. (https://uspto.report/patent/app/20190285359)

Heat exchangers having brazed tube-to-fin joints and methods of producing the same - U.S. patent application number 20200318911 16/478079. HEAT TRANSFER TECHNOLOGIES. Daniel BACELLAR, John R.H. BLACK, Cara S. MARTIN, Dennis M. NASUTA, Reinhard RADERMACHER, Yoram L. SHABTAY. (https://uspto.report/patent/app/20200318911)

III. Teaching, Extension, Mentoring, and Advising

University of Maryland College Park

- *Co-Lecturer ENME701 – Sustainable Energy Conversion and Analysis* – Fall 2020

- *Co-Lecturer ENME635 – Energy Systems Analysis* – Fall 2020
- *Mentoring / Co-Advising new graduate students*: advise on conducting rigorous and high-quality research, provide technical support on modeling and simulation tasks, ensure fundamental engineering and scientific principles are understood and applied to their research

University of Maryland College Park
Teaching Assistant (TA) ENME635 – Energy Systems Analysis – Spring 2016

Private Tutor (calculus, statistics, linear algebra, physics) – Sao Paulo, Brazil – 2007-2008

III.A. Awards and Honors

Best Journal article published in the Science and Technology for the Built Environment (STBE) in 2017
Best Consortium Student Presentation Award, CEEE fall consortium meetings, September 14-16, 2015