

Julio L. Rivera
Curriculum Vitae

CONTACT INFORMATION

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PROFESSIONAL PREPARATION

Ph.D. in Mechanical Engineering, Michigan Technological University, expected 2010

Dissertation title: A Model for Nanoparticle Detachment from Surfaces with Application to Air Quality

Advisors: Drs. John W. Sutherland and Donna J. Michalek

M.S. in Mechanical Engineering, Michigan Technological University, 2008

B.S. in Mechanical Engineering, University of Puerto Rico–Mayagüez (UPRM), 2004

POSITIONS AND APPOINTMENTS

2004–present Graduate Research Assistant, Ph.D. Candidate in Mechanical Engineering
National Science Foundation IGERT Traineeship
Michigan Technological University, Houghton, MI, USA

Fall 2007 Research & Development Intern
United States Department of Agriculture–Forest Service, Arlington, VA, USA
Through Hispanic Association of Colleges & Universities (HACU) National Internship Program

Spring 2005 Doctoral Exchange Student. Graduate coursework on Public Policy
Southern University and A&M College, Nelson Mandela School of Public Policy and Urban Affairs, Baton Rouge, LA, USA

Summer 2004 Injection Molding Process Engineer
Avatar Plastic, Inc., Río Grande, Puerto Rico

Summer 2003 Mechanical Engineering Intern
National Aeronautics Space Administration (NASA), Greenbelt, MD, USA
Through NASA Summer Faculty Fellowship Program

RESEARCH INTERESTS

Manufacturing and air quality; the investigation of the origin, generation, and dispersion of airborne particulate in production environments. Specific areas of interest include: (i) characterizing the mechanisms that lead to particle detachment from surfaces with an emphasis on nanoparticles, (ii) modeling subsequent particle behavior, (iii) use of the models from (i) and (ii) to predict workplace air quality and employee exposure, (iv) identification of the social implications of nanoparticles, (v) incorporation of sustainability into manufacturing and higher education, and investigation of the life cycle impacts of manufacturing processes.

ACCOMPLISHMENTS AND HONORS

- Richard and Elizabeth Henes Fellowship, 2008
- Graduate Certificate in Sustainability at Michigan Tech, 2007
- Nominated for the Michigan Tech Exceptional Graduate Student Leader Award, 2006

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- Inducted in Phi Kappa Phi Honor Society, 2006
- National Science Foundation IGERT Trainee, 2004-2006
- Passed the Fundamentals of Engineering (FE) Exam, 2004

PROFESSIONAL AFFILIATIONS

- Member of the American Society of Mechanical Engineers (ASME)
- Member of the Society of Hispanic Professional Engineers (SHPE)

LANGUAGES

English and Spanish

COURSEWORK AND PROFESSIONAL PREPARATION

Graduate coursework

- Michigan Technological University, Houghton, MI, USA: Engineering for the Environment, Advanced Quality Engineering, Toxicology, Micro-manufacturing, Selected Topics in Nanotechnology, Sustainability, Advanced Fluid Mechanics, Computational Fluid Dynamics, Design of Experiments, and Mathematical Modeling.
- Southern University and A&M College, Baton Rouge, LA, USA: Sustainable Development and Policy, Seminar on Foundation of Public Policy, and Geographic Information Systems.

Professional preparation

- Presented a poster titled “Resuspension of nanoparticles with application to occupational exposure” at the annual National Science Foundation IGERT PI meeting, VA, USA, 2008.
- Poster presentation judge at the Historical Black Colleges & Universities Undergraduate Program (HCBU-UP) National Research Conference, Washington, DC, USA, 2007.
- Participated in the National Institute of Leadership Advancement (NILA), Society of Hispanic Professional Engineers, Dallas, TX, USA, 2007.
- Participated in the Seventh Annual GEM Future Faculty & Professionals Symposium (FFPS), Boston, MA, USA, 2005.
- Nanotechnology, Biotechnology, and Green Manufacturing for Creating Sustainable Technologies, Workshop at Northwestern University, Evanston, IL, USA, 2005.
- Sustainable Futures Institute (SFI) Professional Development Workshop at Michigan Technological University, Houghton, MI, USA, 2005.

PUBLICATIONS

Refereed Journal Articles

1. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland. Behavior of nanoparticles in contact with a flat surface. In preparation.
2. **J.L. Rivera**, B.Seely, D.J. Michalek, and J.W. Sutherland. A review of the societal implications of engineered nanoparticles: An occupational perspective. Submitted to Nature Nanotechnology.
3. J. D’Arcy, J. Dasch, A. Gundrum, **J.L. Rivera**, J. Johnson, D. Carlson, and J. Sutherland. An experimental investigation into the air quality within automotive manufacturing facilities. Submitted to the Journal of Manufacturing Science and Engineering.

4. K.R. Haapala, **J.L. Rivera**, and J.W. Sutherland (2009). Reducing environmental impacts of steel product manufacturing. *Transactions of NAMRI/SME*, 37, 419–426.
5. K.R. Haapala, **J.L. Rivera**, and J.W. Sutherland (2008). Application of life cycle assessment methods to sustainable product design and manufacturing. *International Journal of Innovative Computing, Information and Control: Special Issue on Recent Advances in Flexible Automation*, 4(3), 575–589.
6. V. Kumar, K.R. Haapala, **J.L. Rivera**, M. Hutchins, W. Endres, J. Gershenson, D. Michalek, and J. Sutherland (2005). Infusing sustainability principles into manufacturing/mechanical engineering curricula. *Journal of Manufacturing Systems*, 24(3), 215–222.

Peer Reviewed Articles from Proceedings/Symposia

1. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland (2010). Addressing life cycle uncertainty in manufacturing of nanomaterials. *Proceedings of 2010 ISFA, 2010 International Symposium on Flexible Automation*, Tokyo, Japan, July 12–14.
2. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland (2009). A life cycle assessment approach for the evaluation of transformational technologies. 16th CIRP International Conference on Life Cycle Engineering, Cairo, Egypt.
3. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland (2008). The role of nanotechnology in sustainable manufacturing. *Proceedings of the Global Conference on Sustainable Product Development and Life Cycle Engineering, Sustainability and Manufacturing VI*, Pusan, Korea, 213–217.
4. J.W. Sutherland, **J.L. Rivera**, K.L. Brown, M. Law, M.J. Hutchins, T.L. Jenkins, and K.R. Haapala (2008). Challenges for the manufacturing enterprise to achieve sustainable development. The 41st CIRP Conference on Manufacturing Systems, Keynote paper.
5. K.R. Haapala, M.J. Hutchins, **J.L. Rivera**, V. Kumar, A.R. Clarke, T.D. Eatmon, R.A. Harris, M.H. Durfee, J.R. Mihelcic, D.R. Shonnard, and J.W. Sutherland (2007). Education, Research, and Training Aspects of the Sustainable Futures NSF IGERT Project. *Proceedings of the 2007 ASEE North Midwest Sectional Conference*, Houghton, MI.
6. K.R. Haapala, **J.L. Rivera**, and J. Sutherland (2006). Environmentally responsible process selection via life cycle analysis. *Proceedings of the 2006 International Symposium on Flexible Automation*, Osaka, Japan.
7. V. Kumar, K.R. Haapala, **J.L. Rivera**, M. Hutchins, W. Endres, J. Gershenson, D. Michalek, and J. Sutherland (2005). Towards manufacturing/mechanical engineering curricular change in support of a sustainable future looking forward: Innovations in manufacturing engineering education. CIMEC (CIRP International Manufacturing Engineering Education Conference) and 3rd SME International Conference on Manufacturing Education, San Luis Obispo, CA, 50–58.

Book chapters

- **J.L. Rivera**, D.J. Michalek and J.W. Sutherland (2007). Air quality in manufacturing. *Environmental Conscious Manufacturing Handbook*, Ed. M. Kutz, New Jersey: John Wiley and Sons, Inc., 145–178.

Other publications

- J.W. Sutherland, Global manufacturing and the sustainability challenge, *Technology Century Magazine*, The Engineering Society of Detroit, December 2006-January 2007. Contributed to the preparation of the manuscript.

CONFERENCE PRESENTATIONS

1. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland (2009). A life cycle assessment approach for the evaluation of transformational technologies. 16th CIRP International Conference on Life Cycle Engineering, Cairo, Egypt.
2. **J.L. Rivera**, D.J. Michalek, and J.W. Sutherland (2008). The role of nanotechnology in sustainable manufacturing. Proceedings of the Global Conference on Sustainable Product Development and Life Cycle Engineering, Sustainability and Manufacturing VI, Pusan, Korea, 213–217.
3. **J.L. Rivera** (2008). Reducing the environmental and social impacts of e-waste recovery in developing countries through technology and policy. Proceedings of the Global Conference on Sustainable Product Development and Life Cycle Engineering, Sustainability and Manufacturing VI, Sustainability and Manufacturing VI, Pusan, Korea, 201–206. (Paper written by colleagues)

TEACHING EXPERIENCE

Michigan Technological University

- Sustainable Futures 1: Graduate Teaching Assistant. Fall 2006
The primary responsibilities were to grade assignments and to conduct workshops to teach students the SimaProTM 7 life cycle analysis software. There were 24 students in the class.
- Sustainable Futures 2: Graduate Teaching Assistant. Spring 2007
This class was taught via distance learning technology from Southern University School of Public Policy. Primary responsibilities were to provide technical assistance for the video conferencing, supervise the class, and to promote classroom discussion. There were 8 students in the class.
- Invited speaker to the Environmentally Responsible Design & Manufacturing Class, MEEM 5685
Presentation title: The Applications of Life Cycle Analysis Software for Product Design. The audience consisted of 16 graduated students. Fall 2008

SERVICE

Reviewer for the following journals and conferences

- Sixth International Conference on High Speed Manufacturing, San Sebastián, Spain, 2007
- 13th CIRP International Conference on Life Cycle Engineering, Leuven, Germany, 2006
- Transactions of the ASME, Journal of Manufacturing Science and Engineering
- International Journal of Machine Tools and Manufacture
- Journal of Manufacturing Processes
- Journal of Engineering Manufacture
- Transactions of NAMRI–SME

Michigan Technological University

- Assisted the Graduate School during orientation week as a facilitator. Fall 2008 and 2009
- Vice-President of the Latin Student Organization (NOSOTROS) at Michigan Tech for the 2008–09 school year.
- Organized a campus wide workshop on Intellectual Integrity and Plagiarism in collaboration with the Graduate School. The workshop is now integrated into Orientation Week. Spring 2008

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- Voting Representative of the Graduate Student Council, 2005–2007. The mission of this organization is to improve the quality of life of graduate students.
- Health Insurance Manager, 2005: tasks included ensuring that health care policy meets students' needs, working with customer services issues, and participating in the new health insurance plan negotiation process.
- Orientation Chair, Fall 2006: organized graduate student social activities for Orientation Week.
- Assisted the Educational Opportunities Department and the Department of Mechanical Engineering–Engineering Mechanics in recruitment activities. Two new Ph.D. students were accepted in fall 2006.
- Assisted in the recruitment of students for the NSF REU program in Sustainability for the summer 2007. Three students were accepted.

REFERENCES

Available upon request