

R. E. Padilla

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Education

B. S. Biological Systems Engineering, University of California, Davis (UCD), **2008**.

M. S. Mechanical Engineering, California State University, Los Angeles (CSULA), **2010**.

PhD. Mechanical and Aerospace Engineering, University of California, Irvine (UCI), **2010–2016**.

Research Experiences

Post-Doctoral Researcher, Air Force Research Laboratory (AFRL)- Edwards Air Force Base/University of California, Los Angeles (UCLA), **Advisor:** Malissa Lightfoot. **Project:** Interfacial tension measurements of alkane mixtures with either CO₂ or N₂ at elevated pressures; concentration measurements using raman spectroscopy of dissolved gases in liquid fuels at elevated pressures. **October 2017–Present**

Doctoral Researcher, University of California, Irvine, Department of Mechanical and Aerospace Engineering, **Thesis Advisors:** Derek Dunn-Rankin, William Sirignano, Trinh Pham **Thesis Title:** *Structure and Behavior of Water-laden Methane/Air Flames*. **September 2010–September 2016**

Publications

- **Journal:** Padilla, R. E., Escofet Martin, D., Pitz, W. J., Pham, T. K., Dunn-Rankin, D. (2018). Structure and Behavior of Water-laden CH₄/Air Counterflow Diffusion Flames. *Combustion and Flame*.
- **Journal:** Wu, F. H., Padilla, R. E., Dunn-Rankin, D., Chen, G. B., Chao, Y. C. (2016). Thermal structure of methane hydrate fueled flames. *Proceedings of the Combustion Institute*, 36(3), 4391-4398.
- **Journal:** Lee, S., Padilla, R. E., Dunn-Rankin, D., Pham, T., and Kwon, O.C. (2015) "Extinction Limits and Structure of Counterflow Nonpremixed H₂O-laden CH₄/air Flames," *Energy*, 93, 442–450.
- **Podium presentation and conference paper (peer-reviewed):** Padilla, R.E., Lightfoot M., Danczyk S. "Interfacial Tension of CH₃OH-CO₂ and CH₃OH-N₂ using the Capillary Wave Method" Institute for Liquid Atomization and Spray Systems. ICLASS, Illinois, Chicago. July, 22–26, 2018. Paper #58
- **Podium presentation and conference paper (peer-reviewed):** Padilla, R.E., Carpenter, C., Hicks, M., Lightfoot, M. D. A., High Pressure Measurements of Interfacial Tension Comparing Two Techniques "Institute for Liquid Atomization and Spray Systems". ICLASS, Illinois, Chicago. July, 22–26, 2018. Paper #65
- **Podium presentation and conference paper:** Padilla, R.E., Lightfoot, M. D. A., Danczyk S. "Institute for Liquid Atomization and Spray Systems". ICLASS-Americas 2017, Atlanta, Georgia. Monday, May 15, 2017 -Thursday, May 18, 2017.
- **Podium presentation and conference paper (peer-reviewed):** Padilla, R. E., Dunn-Rankin, D., Pham, T.K., "Extinction limits and structure of counterflow nonpremixed water-laden methane/air flames". The 35th International Symposium on Combustion. San Francisco, California. August 3, 2014 -Friday, August 8, 2014. PROCI-D-13-01177

- **Podium presentation and conference paper:** Padilla, R. E., Lee, S., Dunn-Rankin, D., Pham, T. K., and Kwon, O.C. "Extinction limits and structure of counterflow nonpremixed water-laden methane/air flames". ICDERS-International Colloquium on the Dynamics of Explosions and Reactive Systems. Taipei, Taiwan. July 28–August 2, 2013.
- **Podium presentation and conference paper:** Padilla, R. E., Minniti M., Dunn-Rankin, D., Pham, T. K. "Thin filament pyrometry in fuel hydrate flames and non-premixed water laden methane air flames". 8th US National Meeting-Western States Section. Salt Lake City, Utah. May 19–23, 2011.
- **Podium presentation and conference paper:** Padilla, R. E., Dunn-Rankin, D., Pham, T. K. "Experimental study of water-laden fuel mixtures burning in a non-premixed counterflow configuration". 2011 Fall Technical Meeting of the Western States Section of the Combustion Institute. University of California, Riverside. October 16–18, 2011. Paper # 027LF-0056.
- **Podium presentation and conference paper:** Padilla, R.E., Baltich, J., Fathallah, F. Development of an ergonomic trash bin container for hospitals janitorial staff. 52nd Annual Human Factors and Ergonomic Society Conference. New York.
- **Poster presentation:** Padilla, R. E., Martin, D. E., Dunn-Rankin, D., Pham, T. K. Extinction limits and structure of counterflow nonpremixed water-laden methane/air flames". The 36th Symposium (International) on Combustion. Coex, Seoul, Korea. Poster No. 8813, July 31 - August 5, 2016. Poster # 8813
- **Poster presentation:** Padilla, R. E., Kwon, O.C., Lee, S., Dunn-Rankin, D., Pham, T.K. "Extinction limits and structure of counterflow nonpremixed water-laden methane/air flames" The 34th Symposium (International) on Combustion. Warsaw, Poland. PROCI-D-12-00947
- **Poster presentation:** Padilla, R. E., Dunn-Rankin, D., Pham, T.K. "Extinction limits and structure of counterflow nonpremixed water-laden methane/air flames" Pacific RimWorkshop on Deep Ocean Power Science, Honolulu, HI; February, 2014.

Professional Activities

Podium presentation: MACCCR 11th Annual Fuel and Combustion Research Review, Livermore, Ca. April 09–11, 2018; **Podium presentation:** HINEC Symposium, Lancaster, Ca. February 27–28, 2018; **Podium presentation:** AFRL/RQR Research Review, J.P Eliopoulos Hellenic Center, Lancaster, Ca. February 07–08, 2017; **Editorial Activities** - Brazilian Journal of Chemical Engineering (2017); **Visiting Researcher** Lawrence Livermore National Laboratory, Livermore, Ca. Chemical Kinetics Discussions and use of Chemkin-Pro, Contact: William J. Pitz. December 2016

Fellowships and Awards

President's Dissertation Year fellowship, UCI Graduate Division **October 2014–June 2015**; Faculty Mentor Program Plan (FMP) **October 2012–October 2013**; Graduate Assistance in Area of National Need. Department of Education. **October 2013–June 2014**; Center for Energy & Sustainability, National Science Foundation. **October 2010–June 2011**; Competitive Edge Program Fund for the Improvement of Post secondary Education (FIPSE) via the U.S. Department of Education. **Summer 2010** ; Louis Stokes Alliance for Minority Participation (LS-AMP/CAMP), Bridge to the Doctorate Fellowship. National Science Foundation. **September 2008–June 2010**.

Mentoring and Teaching

University of California, Irvine and California State University of Los Angeles

Mentored high school students from disadvantaged communities and introduced engineering disciplines. Taught undergraduate students, organized discussions and graded homeworks.

Teaching: MAE 107 – Fluid Thermal Science Laboratory – **Fall 2014**; MAE 151– Mechanical Engineering Design – **Winter 2014, 2013**

Mentoring: Pathways Internship Program **June 2016-August 2016**; Research Education Advancement program, (REAP) **August–September 2013**; St. Margaret’s High School Research Program. **August–September 2013**; California State Summer School for Mathematics and Science, (COSMOS) (Cluster 1: Engineering Robots to Rockets) **June 2011, 2012, 2013**; Upward Bound. **October 2012– April 2013**; Center for Energy & Sustainability, (CE& S).**September 2011–June 2013**; Laia Torregrosa Sauret, Universitat Politcnica de Catalunya, Terrassa, Engineering Degree student, **Project:** Automated Measurements in a Counterflow Flame, **2012-2013**; Adriana Llado Gambin, Universitat Politcnica de Catalunya, Terrassa, Engineering Degree student, **Project:** Thin Filament Pyrometry Measurements in a Counterflow Flame; Adrien Ruas, Institut Supérieur de l’Aeronautique et de l’Espace, 2015 **Project:** Water-laden fuel diffusion coflow burner, **June 2015-September 2015**

Technical Skills

Programming Languages MATLAB, Mathcad, Maple, Chemkin Pro, COMSOL, Solid works

Tools and Systems Microsoft Office, LaTeX

Fluent in English and Spanish (speaking, writing, and reading).