

CURRICULUM VITAE

Po-Ya Abel Chuang, Ph.D.

Associate Professor, School of Engineering, University of California, Merced

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RESEARCH INTERESTS:

Proton exchange membrane fuel cell and water electrolyzer, alkaline exchange membrane fuel cell and water electrolyzer, heat exchanger, thermal management, two-phase heat transfer and fluid flow, loop heat pipe, porous material, and carbon fiber.

EDUCATION:

1. **Executive MBA**, Rochester Institute of Technology 08/08–11/09
2. **Doctor of Philosophy**, Mechanical Engineering, Penn State University 08/99–12/03
3. **Master of Science**, Aerospace Engineering, NCKU, Tainan, Taiwan 09/95–06/97
4. **Bachelor of Science**, Aerospace Engineering, NCKU, Tainan, Taiwan 09/91–06/95

CURRENT ACADEMIC POSITION:

1. **Associate Professor**, Mechanical Engineering, University of California Merced, CA 07/21–Present
Taught undergraduate and graduate level courses and researched hydrogen and electrochemical projects

PREVIOUS POSITIONS HELD:

Primary

1. **Assistant Professor**, School of Engineering, University of California Merced, CA 07/14–06/21
2. **Assistant Professor**, Mechanical Engineering Technology, Purdue University, IN 08/12–06/14
3. **Assistant Professor**, Institute of Energy Engineering, National Central University, Taiwan 08/11–07/12
4. **Sr. Research Engineer/Team Lead**, General Motors Corp., Honeoye Falls, NY 04/06–07/11
5. **Sr. Research Engineer**, General Motors Corp., Honeoye Falls, NY 02/05–04/06
6. **Postdoctoral Scholar**, Penn State University, University Park, PA 01/04–01/05
7. **Research Assistant**, Penn State University, University Park, PA 08/00–12/03
8. **Teaching Assistant and Instructor**, Penn State University, University Park, PA 01/00–08/00
9. **F16 Avionics Technician**, Taiwan Air Force, Chiayi, Taiwan 07/97–06/99

Secondary

1. **Lead consultant**, TECE Technologies, Merced, CA 07/16–Present
2. **Visiting Professor**, Fuel Cell Research, National Renewable Energy Laboratory, CO 05/16–12/16
3. **Research Fellow**, Discovery Park, Purdue University, IN 07/12–06/13
4. **Consultant**, Industrial Technology Research Institute, Tainan, Taiwan 01/12–07/12
5. **Consultant**, Omega Piezo Technologies, Inc., State College, PA 02/04–05/04
6. **Research Engineer**, TTH Research, Inc., Laurel, MD 05/01–12/03

TEACHING ACTIVITIES:

1. **Thermodynamics**, School of Engineering, University of California Spring 2021
2. **Convective Heat and Mass Transfer**, School of Engineering, UC, Merced Fall 2020
3. **Thermodynamics**, School of Engineering, University of California Spring 2020
4. **Fuel Cell Fundamentals, Modeling, and Diagnostic**, School of Engineering, UC, Merced Fall 2019
5. **Thermodynamics**, School of Engineering, University of California Spring 2019
6. **Convective Heat and Mass Transfer**, School of Engineering, UC, Merced Fall 2018
7. **Fuel Cell Fundamentals, Modeling, and Diagnostic**, School of Engineering, UC, Merced Spring 2018
8. **Thermodynamics**, School of Engineering, University of California Fall 2017
9. **Thermodynamics**, School of Engineering, University of California Spring 2017
10. **Thermodynamics**, School of Engineering, University of California Spring 2016
11. **Fuel Cell Fundamentals, Modeling, and Diagnostic**, School of Engineering, UC, Merced Fall 2015
12. **Professional Seminar**, School of Engineering, University of California, Merced Spring 2015

13. Thermodynamics , School of Engineering, University of California, Merced	Spring 2015
14. Professional Seminar, School of Engineering, University of California, Merced	Fall 2014
15. Fuel Cell Fundamentals, Modeling, and Diagnostic , Purdue University	Spring 2014
16. Applied Fluid Mechanics , Mechanical Engineering Technology, Purdue University	Fall 2013
17. Applied Fluid Mechanics , Mechanical Engineering Technology, Purdue University	Spring 2013
18. Electric Vehicle , Mechanical Engineering Technology, Purdue University	Fall 2012
19. Applied Fluid Mechanics , Mechanical Engineering Technology, Purdue University	Fall 2012
20. Advanced Heat Transfer , Mechanical Engineering, National Central University, Taiwan	Spring 2012
21. Vehicle Electrification , Mechanical Engineering, National Central University, Taiwan	Spring 2012
22. Heat Exchanger Design , Energy Engineering, National Central University, Taiwan	Fall 2011
23. Experimental Method , Energy Engineering, National Central University, Taiwan	Fall 2011

PUBLICATIONS:

1. Mehrazi, S., Sarker, M., Mojica, F., Rolfe, P., **Chuang, P. A.**, "A rheological approach to studying process-induced structural evolution of the microporous layer in a proton exchange membrane fuel cell." *Electrochimica Acta* (2021): 138690. <https://doi.org/10.1016/j.electacta.2021.138690>
2. Zhang, H., Zhu, L., Harandi, H. B., Duan, K., Zeis, R., Sui, P., **Chuang, P. A.**, "Microstructure reconstruction of the gas diffusion layer and analyses of the anisotropic transport properties." *Energy Conversion and Management* 241 (2021): 114293. <https://doi.org/10.1016/j.enconman.2021.114293>
3. Zhang, H., Rahman, M. A., Mojica, F., Sui, P., **Chuang, P. A.**, "A Comprehensive Two-Phase Proton Exchange Membrane Fuel Cell Model Coupled with Anisotropic Properties and Mechanical Deformation of the Gas Diffusion Layer," *Electrochimica Acta* (2021), <https://doi.org/10.1016/j.electacta.2021.138273>
4. Felipe, M., Rahman, M. A., Sarker, M., Hussey, D. S., Jacobson, D. L., LaManna, J. M., **Chuang, P. A.**, "Study of converging-diverging channel induced convective mass transport in a proton exchange membrane fuel cell," *Energy Conversion and Management* (2021), <https://doi.org/10.1016/j.enconman.2021.114095>
5. Moosavi, R., Banihashemi, M., Lin, C., **Chuang, P. A.**, "Combined effects of a microchannel with porous media and transverse vortex generators (TVG) on convective heat transfer performance," *International Journal of Thermal Sciences*, volume 166, August 2021, 106961, <https://doi.org/10.1016/j.ijthermalsci.2021.106961>
6. Kakati, N, Li, G., **Chuang, P. A.**, " Insights into the Ni/C-Based Thin-Film Catalyst Layer Design for Urea Oxidation Reaction in a Three-Electrode System," *ACS Appl. Energy Mater.* 2021, <https://doi.org/10.1021/acsaem.1c00607>
7. del Rosario, J. D., Li, G., Labata, M. F., Ocon, J. D., **Chuang, P.A.**, "Unravelling the roles of alkali-metal cations for the enhanced oxygen evolution reaction in alkaline media," *Applied Catalysis B: Environmental* 2021, <https://doi.org/10.1016/j.apcatb.2021.119981>
8. Hsieh, W., Signorini, A., **Chuang, P. A.**, Chen, W. F., "Investigating Students' Experiences and Perceptions of a Flipped and Adaptive Online Engineering Thermodynamics Class", *International Journal of Engineering Education* (2021), 37(2), 362-375.
9. Serrao, A. F., Del Rosario, J. D., **Chuang, P. A.**, Chong, M. N., Morikawa, Y., Padama, A. B., Ocon, J., "Alkaline earth atom doping-induced changes in the electronic and magnetic properties of graphene: a density functional theory study." *RSC Advances* 11, no. 11 (2021): 6268-6283 <https://doi.org/10.1039/D0RA08115A>
10. Labata, M. F., Li, G., Ocon, J. D., **Chuang, P. A.**, "Insights on platinum-carbon catalyst degradation mechanism for oxygen reduction reaction in acidic and alkaline media," *Journal of Power Sources* (2020) <https://doi.org/10.1016/j.jpowsour.2020.229356>
11. Moosavi, R., Moltafet, R. Lin, C-X., **Chuang, P. A.**, "Numerical Modeling of Fractional Viscoelastic Non-Newtonian Fluids over a Backward Facing Step - Buoyancy Driven Flow and Heat Transfer," *Thermal Science and Engineering Progress* (2020) <https://doi.org/10.1016/j.tsep.2020.100767>
12. **Chuang, P. A.**, Rahman, M. A., Mojica, F., Hussey, D. S., Jacobson, D. L., LaManna, J. M., "The Interactive Effect of Heat and Mass Transport on Water Condensation in the Gas Diffusion Layer of a Proton Exchange Membrane Fuel Cell", *Journal of Power Sources* (2020) <https://doi.org/10.1016/j.jpowsour.2020.229121>
13. Samaniego, A. J., Arabelo, A. K., Sarker, M, Mojica, F., Madrid, J., Chuang, P. A., Ocon, J., Espiritu, R., "Fabrication of cellulose acetate-based radiation grafted anion exchange membranes for fuel cell application," *Journal of Applied Polymer Science* (2020). <https://doi.org/10.1002/app.49947>

14. Mendoza, R. M., Mora, J. M., Cervera, R. B., **Chuang, P.A.**, "Experimental and Analytical Study of an Anode - Supported Solid Oxide Electrolysis Cell," *Chemical Engineering & Technology* (2020). <https://doi.org/10.1002/ceat.202000204>
15. Du, S., Li, W., Wu, H., **Chuang, P. A.**, Pan, M., Sui, P., "Effects of ionomer and dispersion methods on rheological behavior of proton exchange membrane fuel cell catalyst layer ink," *International Journal of Hydrogen Energy* (2020). <https://doi.org/10.1016/j.ijhydene.2020.07.241>
16. Mojica, F., Rahman, Md. A., Mora, J. M., Ocon, J. D., **Chuang, P. A.**, "Experimental study of three channel designs with model comparison in a PEM fuel cell," *Fuel Cells* (2020). <https://doi.org/10.1002/face.202000002>
17. Na, W., Gou, B., Kim, J., Mojica, F., **Chuang, P.A.**, "Complementary cooperation dynamic characteristics analysis and modeling based on multiple-input multiple-output methodology combined with nonlinear control strategy for a polymer electrolyte membrane fuel cell," *Renewable Energy*, 149 (2020): 273-286. <https://doi.org/10.1016/j.renene.2019.12.059>
18. Nazari, M., **Chuang, P. A.**, Esfahani, J. A., Rashidi, S., "A comprehensive geometrical study on an induced-charge electrokinetic micromixer equipped with electrically conductive plates." *International Journal of Heat and Mass Transfer* (2020): 146, 118892. <https://doi.org/10.1016/j.ijheatmasstransfer.2019.118892>
19. Li, G. F., Divinagracia, M., Labata, M. F., Ocon, J. D., **Chuang, P. A.**, "Electrolyte-Dependent Oxygen Evolution Reactions in Alkaline Media: Electrical Double Layer and Interfacial Interactions." *ACS applied materials & interfaces* (2019): 11(37), 33748-33758. <https://doi.org/10.1021/acsami.9b06889>
20. Rahman, M. A., Mojica, F., Sarker, M., **Chuang, P. A.**, "Development of 1-D multiphysics PEMFC model with dry limiting current experimental validation." *Electrochimica Acta* (2019): 134601. <https://doi.org/10.1016/j.electacta.2019.134601>
21. Musico, Y. L. F., Kakati, N., Labata, M. F., Ocon J. D., **Chuang, P. A.**, "One-pot hydrothermal synthesis of heteroatom co-doped with fluorine on reduced graphene oxide for enhanced ORR activity and stability in alkaline media." *Materials Chemistry and Physics* 236 (2019): 121804. <https://doi.org/10.1016/j.matchemphys.2019.121804>
22. Zhang, H., Xiao, L., **Chuang P. A.**, Djilali, N., Sui, P., "Coupled stress-strain and transport in proton exchange membrane fuel cell with metallic bipolar plates," *Applied Energy* 251 (2019): 113316. <https://doi.org/10.1016/j.apenergy.2019.113316>
23. Li, G, Yang, D., **Chuang, P. A.**, "Defining Nafion ionomer roles for enhancing alkaline oxygen evolution electrocatalysis," *ACS Catalysis* 2018, <http://dx.doi.org/10.1021/acscatal.8b02217>
24. Geronia, R. M., Padama, A. A, **Chuang, P. A.**, Chong M. N., Ocon, J. D, "Monatomic oxygen adsorption on halogen-substituted monovacant graphene," *International Journal of Hydrogen Energy*. 2018 Sep 13;43 (37):17673-81. <https://doi.org/10.1016/j.ijhydene.2018.07.185>
25. Li, G., **Chuang, P. A.**, "Identifying the forefront of electrocatalytic oxygen evolution reaction: electronic double layer," *Applied Catalysis B: Environmental* 2018, <https://doi.org/10.1016/j.apcatb.2018.08.037>
26. Li, G., Anderson, L, Chen, Y, Pan M., **Chuang, P. A.**, "New Insights into Evaluating Catalyst Activity and Stability of Oxygen Evolution Reactions in Alkaline Media," *Sustainable Energy & Fuels*, 2017, <https://doi.org/10.1039/C7SE00337D>
27. Mojica, F. E., **Chuang, P. A.**, Ruiz, U. (2017, June), "Solar Regenerative Hydrogen Fuel Cell Charging System," Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/28833>
28. Rahman, M. A., Mora, J. M., **Chuang, P. A.**, "A Computational Study of Flow Sensitivity of a PEM Fuel Cell with Multi-Parallel Flow Channels," *Proceeding of the 2017 COMSOL Conference in Boston, MA*
29. Chen, Y., Mojica, F., Li, G, **Chuang, P. A.**, "Experimental Study and Analytical Modeling of an Alkaline Water Electrolysis Cell," *International Journal of Energy Research* 2017;1-9. <https://doi.org/10.1002/er.3806>
30. **Chuang, P. A.**, Cimbala, J. M., Brenizer, J. S., "Experimental and Analytical Study of a Loop Heat Pipe at Positive Elevation using Neutron Radiography," *International Journal of Thermal Science* 77 (2014) 84-95
31. Chen, P. C., Chang, S. M., and **Chuang, P. A.**, "Optimal Oxygen Stoichiometry for Maximum Net Power Output of Proton Exchange Membrane Fuel Cell Systems," *International Journal on Energy Conversion (I.R.E.Con.)*, Vol. 1, N. 1, January 2013, pp. 4-13

32. Nicotera, P., Evans, R., Weaver, C., and **Chuang, P. A.**, (2012) “Gas Diffusion Media for Proton Exchange Membrane Fuel Cells Made from Carbon Fibers with Controlled Conductivity,” *MRS Proceedings*, 1384, mrsf11-1384-b16-04 doi:10.1557/opl.2012.353
33. Fultz, D. and **Chuang, P. A.**, “The Property and Performance Differences between Catalyst Coated Membrane and Catalyst Coated Diffusion Media,” *Journal of Fuel Cell Science and Technology*, Volume 8, Issue 4, August 2011
34. Heller, K., **Chuang, P. A.**, Brenizer, J., Ünlü, K., “Water Quantification Using Neutron Imaging”, *American Nuclear Society*, Transactions, 2005, 93(1), 860-861
35. Pekula, N., Heller, K., **Chuang, P. A.**, et al., “Study of water distribution and transport in a polymer electrolyte fuel cell using neutron imaging,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment*, Volume 542, Issues 1-3, 21 April 2005, pp. 134-141
36. **Chuang, P. A.**, Turhan, A., Heller, K., et al., “The nature of flooding and drying in polymer electrolyte fuel cells,” 3rd *International Conference on Fuel Cell Science, Engineering and Technology*, May 23-25, 2005, Ypsilanti, MI, USA
37. Cimbala, J. M., Brenizer, J. S., **Chuang, P. A.**, et al., “Study of a loop heat pipe using neutron radiography,” *Applied Radiation and Isotopes*, 61 (2004) 701-705
38. **Chuang, P. A.**, Cimbala, J. M., and Brenizer, J. S., “Theoretical and experimental study of a loop heat pipe at positive elevation,” *International Mechanical Engineering Congress and RD&D Expo*, November 13-19, 2004, Anaheim, CA USA
39. **Chuang, P. A.**, Cimbala, J. M., and Brenizer, J. S., “Analytical modeling of a loop heat pipe at positive elevation,” *International Mechanical Engineering Congress and RD&D Expo*, November 13-19, 2004, Anaheim, CA USA
40. **Chuang, P. A.**, Cimbala, J. M., Brenizer, J. S., et al., “Comparison of experiments and 1-D steady-state model of a loop heat pipe,” *International Mechanical Engineering Congress and Exposition*, November 17-22, 2002, New Orleans, LA USA

CONFERENCE PRESENTATIONS:

1. 2020 Pacific Rim Meeting on Electrochemical and Solid State Science (PRiME), October 4-9, 2020 **8/13/20**
2. 2020 World Fuel Cell Conference (WFCC), August 11-14, 2020, Toronto, Canada (abstracts accepted, **conferences cancelled due to COVID-19**) **8/13/20**
3. 2020 Gordon Research Conference on Fuel Cells, July 26-31, 2020, Smithfield, RI (abstracts accepted, **conferences cancelled due to COVID-19**) **7/29/20**
4. The 4th Edition of Catalysis and Chemical Engineering (CCE 2020), February 24-26, 2020, Los Angeles, USA (abstract accepted, **didn't attend due to COVID-19**) **2/25/20**
5. 16th International Conference on Environmental Science and Technology (CEST), September 4 – September 7, 2019, Rhodes, Greece **9/6/19**
6. The 9th International Conference on Engineering and Applied Science (ICEAS 2019), August 6-8, 2019, Hawaii, USA **8/7/19**
7. 2nd International Conference on Electrolysis, June 9-13, 2019, Loen, Norway **6/10/19**
8. 235th ECS Meeting, May 26-31, 2019, Dallas, Texas **5/27/19**
9. 1st 1st International Conference on Materials Science and Engineering in the Philippines (ICMSEP2018), October 25-27, 2018, Tagaytay City, Philippines **10/25/18**
10. 69th International Society of Electrochemistry Annual Meeting, September 2-7, 2018, Bologna, Italy **9/5/18**
11. 2018 Gordon Research Conference on Fuel Cells, July 29-August 3, 2018, Smithfield, RI **7/29/18**
12. 233rd ECS Meeting, May 13-17, 2018, Seattle, Washington **5/15/18**
13. 38th PAASE Annual Meeting and Symposium (APAMS), April 6-7, 2018, Tucson, Arizona **4/6/18**
14. European Fuel Cell Conference and Exhibition, December 12-15, 2017, Naples, Italy **12/12/17**
15. American Physical Society – 2017 Annual Meeting of the Far West Section, November 3-4, 2017, Merced, CA **11/4/17**
16. COMSOL Conference 2017, October 4-6, 2017, Boston, MA **10/4/17**
17. 232nd Meeting of the Electrochemical Society, October 1-5, 2017, National Harbor, MD **10/1/17**
18. 15th International Conference on Environmental Science and Technology (CEST), August 31 – September 2, 2017, Rhodes, Greece **8/31/17**

19. The 7th World Hydrogen Technology Convention (WHTC), July 9-12, 2017, Prague, Czech Republic 7/9/17
20. 2017 ASEE Annual Conference & Exposition, June 25-28, 2017, Columbus, Ohio 6/25/17
21. Polymers for Fuel Cells, Energy Storage, and Conversion, Asilomar Conference Grounds, February 26-March 1, 2017, Pacific Grove, CA 2/27/17
22. 2nd Institute of Materials Engineers of the Philippines (IMEP) Conference, October 27-28, 2016, Quezon City, Philippines 10/27/16
23. National Electrochemical Energy Storage Workshop (NEESW), October 20-22, 2016, Quezon City, Philippines 10/22/16
24. 2016 Gordon Research Conference on Fuel Cells, August 7-12, 2016, Easton, MA 8/10/16
25. 46th Power Sources Conference, June 9-12, 2014, Orlando, FL 6/10/14
26. 10th Int'l Hydrogen & Fuel Cell Expo, February 26-28, 2014, Tokyo, Japan 2/27/14
27. 2010 Materials Research Society Fall Meeting, November 29-December 2, 2010, Boston, MA 11/29/10
28. 2010 Fuel Cell Seminar & Exposition, October 18-22, 2010, San Antonio, TX 10/19/10
29. 218th Meeting of the Electrochemical Society, October 10-15, 2010, Las Vegas, NV 10/14/10
30. ASME 8th International Conference on Fuel Cell Science, June 14-16, 2010, Brooklyn, NY 6/14/10
31. 2009 International Mechanical Engineering Congress and Exposition (IMECE), ASME, November 13-19, 2009, Lake Buena Vista, FL 11/19/09
32. Materials Science & Technology 2009 Conference & Exhibition, October 25-29, 2009, Pittsburgh, PA 10/29/09
33. ASME 7th International Conference on Fuel Cell Science, June 8-10, 2009, Newport Beach, CA 6/10/09
34. 2008 Gordon Research Conference on Fuel Cells, July 20-25, 2008, Smithfield, RI 7/23/07
35. ASME 5th International Conference on Fuel Cell Science, June 18-20, 2007, New York, NY 6/20/07
36. ASME 3rd International Conference on Fuel Cell Science, May 23-25, 2005, Ypsilanti, MI 5/24/05
37. 208th Meeting of the Electrochemical Society, October 16-21, 2005, Los Angeles, CA, USA 10/16/05
38. Spring 2005 Meeting of the Electrochemical Society, May 15-20, 2005, Quebec, CANADA 5/16/05
39. 2004 International Mechanical Engineering Congress and Exposition (IMECE), ASME, November 13-19, 2004, Anaheim, CA 11/14/04
40. 2002 International Mechanical Engineering Congress and Exposition (IMECE), ASME, November 17-22, 2002, New Orleans, LA 11/19/02

ISSUED PATENTS:

1. Lai, Y. H., Rapaport, P. A., **Chuang, P. A.**, Gu, W. (2017), "Fuel cell stack with improved end cell performance provided by higher modulus of elasticity." U.S. Patent No. 9,853,307. 26 Dec. 2017
2. Lai, Y. H., Rapaport, P. A., **Chuang, P. A.**, Gu, W. (2017) "Fuel cell stack with improved end cell performance through a diffusion media having lower compressibility." U.S. Patent No. 9,831,511. 28 Nov. 2017
3. **Chuang, P. A.**, Gu, W., Smith, S. G. (2012) "Fuel cell with anode and cathode plate temperature difference." U.S. Patent No. 8,323,842. 4 Dec. 2012.
4. **Chuang, P. A.**, Gu, W. (2012) "Optimized gas diffusion media to improve fuel cell performance." U.S. Patent No. 8,178,259. 15 May 2012.
5. Berning, T., Wieser, C., **Chuang, P. A.**, Trabold, T. A. (2010) "Method for optimizing diffusion media with spatially varying mass transport resistance." U.S. Patent No. 7,829,230. 9 Nov. 2010.

PATENT APPLICATIONS:

1. Li, G., **Chuang, P. A.** (Provisional Application No.: 62939869), "Iridium-based Amorphous Electrocatalyst for Oxygen Evolution Reaction and Surfactant-Assisted Adams Fusion Synthesis of same." U.S. Patent Application TBD. (Filed on November 25, 2019)
2. Fultz, D. W., Nicotera, P. D., Trabold, T. A., Dadheech, G. V., **Chuang, P. A.** (Publication number: US20110143262), "Gas diffusion media made from electrically conductive coatings on non-conductive fibers." U.S. Patent Application 12/635,352. (Filed on December 10, 2009)
3. Lai, Y. H., **Chuang, P. A.**, Fowler, S., Lakshmanan, B., Miller, D. (Publication number: US 20070141405), "Method of making a membrane electrode assembly comprising a vapor barrier layer, a gas diffusion layer, or both." U.S. Patent Application 11/560,454. (Filed on November 16, 2006)

INVITED TALKS & KEYNOTE SPEECHES (ACADEMIC and NON-PROFIT ORGANIZATION):

1. **“Introduction of Fuel Cell and Electrolysis Research at UC Merced,”** *Keynote*, 8th International Seminar on Green Energy Conversion, October 24, 2019, Kofu City, Yamanashi, Japan (Invited by Prof. Donald Tryk)
2. **“Power management for an Indoor Vertical Farming System,”** *Seminar*, Commission on Higher Education, Philippines, July 19, 2019, Quezon City, Philippines (Invited by Dr. Willy Padolina)
3. **“Introduction of Fuel Cell and Electrolysis Research at UC Merced,”** *Seminar*, Technical University of Denmark, June 17, 2019, Lyngby, Denmark (Invited by Prof. Qingfeng Li)
4. **“Interactive Transport and Water Management in a PEM Fuel Cell,”** *Keynote*, 1st International Conference on Materials Science and Engineering in the Philippines (ICMSEP2018), October 25, 2018, Tagaytay City, Philippines (Invited by Prof. Rinlee Butch Cervera)
5. **“Interactive Transport and Water Management in a PEM Fuel Cell,”** *Keynote*, 2018 International Symposium of Automotive Fuel Cell Power System, September 18, 2018, Wuhan, China (Invited by Prof. Mu Pan)
6. **“Fuel Cell and Hydrogen Economy for Future Energy Solution,”** *Keynote*, e3-STArt 2018, International Academic R&D Festival, September 6, 2018, Central Luzon State University, Philippines (Invited by Dean Ireneo C. Agulto)
7. **“Design Consideration of High Power and Energy Density Fuel Cell Stack,”** *Seminar*, Green Energy and Environment Research Laboratories, Industrial Technology Research Institute (ITRI), July 17, 2018, Tainan, Taiwan (Invited by Dr. Chien-Chung Huang)
8. **“Introduction of Fuel Cell Research and Development,”** *Keynote*, Innovating and Engineering for a Sustainable Future, Advanced Engineering Colloquium 2017, Monash University Malaysia, November 27, 2017, Selangor, Malaysia (Invited by Prof. A/PROF. Meng Han Chong and Chang Jang Sen)
9. **“Fuel Cell Technology at UC Merced,”** *Graduate Seminar*, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, September 9, 2017, Wuhan, China (Invited by Prof. Mu Pan)
10. **“Investigation of Interactive Electron, Gas, Liquid, and Heat Transport to Enhance Electrochemical Reaction,”** *Graduate Seminar*, Department of Chemistry, Technical University of Munich, July 13, 2017, Garching, Germany (Invited by Prof. Hubert A. Gasteiger)
11. **“Going Green and Getting Clean: Fuel Cells and the Future,”** *Seminar*, School of Engineering, Morgan State University, February 20, 2017, Baltimore, MD (Invited by Prof. Anthony A. Saka, Chair)
12. **“PEM Fuel Cell Introduction and Current Research and Development,”** *Keynote*, 2nd Institute of Materials Engineers of the Philippines (IMEP) Conference, October 27, 2016, Quezon City, Philippines (Invited by Prof. Rinlee Cervera)
13. **“Introduction of Fuel Cell Research at University of California, Merced,”** *Graduate Seminar*, Institute of Fuel Cell, Shanghai Jian Tong University, October 24, 2016, Shanghai, China (Invited by Prof. Junliang Zhang)
14. **“Introduction to Fuel Cells, FC Types, Hydrogen Economy,”** National Electrochemical Energy Storage Workshop (NEESW), University of the Philippines, Diliman, October 22, 2016, Quezon City, Philippines (Invited by Prof. Joey Ocon)
15. **“Introduction of Fuel Cell Technology,”** *Seminar*, Wuhan Marine Electric Propulsion Research Institute, July 21, 2016, Wuhan, China (Invited by Dr. Donghao Ye)
16. **“Fuel Cell Research at UC Merced,”** *Seminar*, University of the Philippines, Diliman, July 12, 2016, Quezon City, Philippines (Invited by Prof. Rinlee Cervera and Prof. Joey Ocon)
17. **“Research, Development, Intellectual Properties, and Technopreneurship,”** *Workshop*, Central Luzon State University, July 4-11, 2016, Science City of Muñoz, Philippines (Invited by PhilDev Chairman Dado Banatao and Dean Ireneo Agulto)
18. **“Introduction of Electrochemical Research at UC Merced,”** *Seminar*, National Renewable Energy Laboratory (NREL), April 15, 2016, Golden, CO (Invited by Dr. Kenneth Neyerlin)
19. **“PEM Fuel Cell for Automotive and Marine Application”** *Graduate Seminar*, Wuhan Institute of Marine Electric Propulsion, January 4-6, 2016, Wuhan, China (Invited by Dr. Donghao Ye)
20. **“Introduction of Fuel Cell Research at UC Merced,”** *Graduate Seminar*, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, January 6, 2016, Wuhan, China (Invited by Prof. Mu Pan)

21. **“In-Depth Discussion of Fuel Cell Technology for Automotive Application,”** *Graduate Seminar*, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, July 20, 2015, Wuhan, China (Invited by Prof. Mu Pan)
22. **“Introduction of Thermal and Electrochemical Energy Research at UC Merced,”** *Seminar*, NASA Goddard Space Flight Center, June 9, 2015, Greenbelt, MD, USA (Invited by Dr. Jentung Ku)
23. **“Introduction of Fuel Cell Research Laboratory at UC Merced,”** *Seminar*, Army Research Laboratory, January 12, 2015, Adelphi, MD, USA (Invited by Dr. Xiaoming Ren)
24. **“Study of Interactive Transport in Fuel Cells,”** *Graduate Seminar*, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, December 29, 2014, Dalian, China (Invited by Dr. Hongmei Yu)
25. **“Introduction of Fuel Cell Technology,”** *Graduate Seminar*, Department of Chemical Engineering, Dalian University of Technology, December 29, 2014, Dalian, China (Invited by Prof. Xuemei Wu)
26. **“Introduction of Fuel Cell Technology,”** *Graduate Seminar*, Institute of Aeronautics and Astronautics, National Cheng-Kung University, December 22, 2014, Tainan, Taiwan (Invited by Prof. Wei-Hsiang Lai)
27. **“Study of Interactive Transport Phenomena in Fuel Cells,”** *Graduate Seminar*, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, November 7, 2014, Wuhan, China (Invited by Prof. Mu Pan)
28. **“Study of Interactive Transport Phenomena in Fuel Cells,”** *Graduate Seminar*, Clean Energy Automotive Engineering Center, Tongji University, November 6, 2014, Shanghai, China
29. **“The Impact of Diffusion Media and Water Management on Fuel Cell Stack Performance and Durability,”** *2014 International Symposium on Electrochemical Energy*, Jiao Tong University, July 14, 2014, Shanghai, CHINA
30. **“Limiting Current as a Screening Tool for Diffusion Media and Micro-Porous Layers,”** *2010 International Fuel Cell Workshop*, Fuel Cell Center, Yuan Ze University, December 6, 2010, Taoyuan, TAIWAN
31. **“Fuel Cell Vehicle Commercial Applications,”** *Low Emission Light Vehicle Technical Standards and Validation International Forum*, Taiwan Institute of Economic Research, December 1, 2010, Taipei, TAIWAN
32. **“Current Challenges in Fuel Cell Stack Research and Commercialization,”** *AIST FC-Cubic Mass Transfer Workshop*, Polymer Electrolyte Fuel Cell Cutting-Edge Research Center, Advanced Industrial Science and Technology, January 8, 2010, Tokyo, JAPAN
33. **“Challenges and Opportunities of PEM Fuel Cell Research,”** *Tianda International Fuel Cell Workshop*, State Key Laboratory of Engines, Tianjin University, December 23-23, 2009, Tianjin, CHINA
34. **“Challenges of Current Fuel Cell Stack Technology,”** *Canada-US Fuel Cell Modeling and Characterization Workshop*, Institute of Fuel Cell Innovation, National Research Council, November 12-13, 2009, Vancouver, CANADA
35. **“Challenges and Opportunities of PEM Fuel Cell for Automotive Application,”** *Graduate Seminar*, Chemistry Department, Chung-Yuan Christian University, December 29, 2008, Chung-Li, TAIWAN
36. **“PEM Fuel Cell for Automotive Application,”** *Graduate Seminar*, Mechanical Engineering, Michigan Tech University, December 11, 2008, Houghton, Michigan, USA
37. **“Impact of Diffusion Media on Fuel Cell Operation,”** *2008 Gordon Research Conference on Fuel Cells*, July 20-25, 2008, Smithfield, Rhode Island, USA
38. **“Study of Water Management in a Polymer Electrolyte Fuel Cell,”** Energy and Environment Research Laboratories, Industrial Technology Research Institute, September 29, 2004, Hsin-Chu, TAIWAN
39. **“Study of a Loop Heat Pipe using Neutron Radiography,”** *Graduate Seminar*, Nuclear Engineering, The Pennsylvania State University, December 11, 2003, University Park, Pennsylvania, USA
40. **“Fundamental Studies of Loop Heat Pipes,”** Thermal Division, U.S. Naval Research Laboratory, July 23, 2003, Washington D.C., USA

AWARDS:

1. Advisor of Best **Student Poster Award**, 1st place **05/19**
235th ECS Meeting, May 26-31, 2019, Dallas, Texas
2. Awardee for **2017 Hellman Fellow Award** **05/17**
Elected by Vice Provost for the Faculty and Committee on Research (COR).
3. Awardee for **Senate Faculty Distinguished Undergraduate Teaching Award**, UCM **05/16**

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| | Elected by Undergraduate Council for excellence in teaching at the undergraduate level. | |
| 4. | Awardee for Faculty Success Program , Academic Personnel Office, UCM | 01/15—05/15 |
| 5. | Discovery Park Research Fellow, Purdue University
Elected by Discovery Park Research Centers, Purdue University. | 07/13—06/14 |
| 6. | Honorary Member of Beta Gamma Sigma Honor Society
Elected by The E. Philip Saunders College of Business, Rochester Institute of Technology. | 04/10 |
| 7. | Honorary Member of The Phi-Tau-Phi Scholastic Honor Society
Elected by The National Cheng-Kung University for excellent academic achievement. | 01/97 |
| 8. | Outstanding Fellowship of IAA, NCKU, Tainan, Taiwan
Awarded by IAA, NCKU for Excellent Academic Performance. | 07/96 |