

Curricular Vitae of J. R. Chen

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EDUCATIONS

PhD, *Chemical Engineering*, Imperial College London, Nov. 1993

MSc, *Chemical Engineering*, Imperial College London, Sept. 1990

Diploma, *Chemical Engineering*, National Taipei Institute of Technology, June 1987

PROFESSIONAL EXPERIENCES

Feb. 2018-present *Distinguished Professor*, Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science & Technology, Taiwan.

Aug. 2016-Jan. 2018 *Vice President*, National Kaohsiung First University of Science & Technology, Taiwan.

Mar. 2014-Oct. 2016 *Dean*, College of Engineering, National Kaohsiung First University of Science & Technology, Taiwan.

Aug. 2010-Mar. 2014 *Chairman*, Department of Safety, Health and Environmental Engineering, National Kaohsiung First University of Science & Technology, Taiwan.

Aug. 2005-Dec. 2011 *Professor*, Department of Safety, Health and Environmental Engineering, National Kaohsiung First University of Science & Technology, Taiwan.

Jan. 2002-present *Director*, EPA/NKFUST Southern Center for Emergency Response of Toxic Substance, National Kaohsiung First University of Science & Technology, Taiwan.

Aug. 1997-July 2005 *Associate Professor*, Department of Safety, Health and Environmental Engineering, National Kaohsiung First University of Science & Technology, Taiwan.

Nov. 1994-July 1997 *Researcher and Project Leader (became Manager of Process Safety Design Department since March 1996)*, Center for Industrial Safety and Health Technology, Industrial Technology Research Institute, Hsinchu, Taiwan.

Dec. 1993-Oct. 1994 *Postdoctoral research associate*, Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan.

MAIN PUBLICATIONS

1. Lin, Y. J., Nguyen, T. T., Chin, M. G., Wang, C. C., Liu, C. H., Tsai, H. Y., Chen, J. R.*, ... & Ramachandran, R. “Disposal of hexachlorodisilane and its hydrolyzed deposits.” *Journal of Loss Prevention in the Process Industries*, 65,104136 (2020)
2. Nguyen, T. T., Lin, Y. J., Chin, M. G., Wang, C. C., Tsai, H. Y., Chen, J. R.*, ... & Baylor, J. “Characterization and control of energetic deposits from hexachlorodisilane in process tool exhaust lines.” *Journal of Loss Prevention in the Process Industries*, 65, 104127 (2020)
3. Lin, Y.J., Liu, C.H., Chin, M.G., Wang, C.C., Wang, S.H., Tsai, H.Y., J. R. Chen*, Ngai, E.Y., Ramachandran, R., “Characterization of Shock-Sensitive Deposits from the Hydrolysis of Hexachlorodisilane” *ACS Omega*. 4, 1416-1424 (2019).
4. Yang, H. N., Lin, Y. J., Liu, C. H., Chin, M. G., Wang, C. C., Tsai, H. Y., J. R. Chen*, "Suppression of Flame Propagation in a Long Duct by Segregation with Inert Gases." *Chemical Engineering Transactions* 77, 247-252 (2019)
5. Tsai, H. Y., H. L. Hung, S. Y. Wu, C. W. Ku, J. R. Chen*, P. A. Fomin, A. V. Fedorov, “Effects of Temperature and Moisture on the Ignition Behavior of Silane Release into Air,” *Combustion, Explosion, and Shock Waves*, 53(3) 276–282 (2017).
6. Tsai, H. Y., Y. J. Lin, Y. C. Chang, J. S. Lin, J. R. Chen* & E. Y. Ngai, “Unconfined Silane-Air Explosions,” *Journal of Loss Prevention in the Process Industries*, 49B, 700-710 (2017)
7. Yang, H. N., J. H. Chen, H. J. Chiu, T. J. Kao, H. Y. Tsai, J. R. Chen*, “Confined Vapor Explosion in Kaohsiung City - A Detailed Analysis of the Tragedy in the Harbor City,” *Journal of Loss Prevention in the Process Industries*, 41, 107-120 (2016)
8. Ngai, E.Y., R. Fuhrhop, J.R. Chen*, J. Chao, C.R. Bauwens, C. Mjelde, G. Miller, J. Sameth, J. Borzio, M. Telgenhoff, B. Wilson, “CGA G-13 Large-Scale Silane Release Tests – Part I. Silane Jet Flame Impingement Tests and Thermal Radiation Measurement,” *Journal of Loss Prevention in the Process Industries*, 36, 478-487 (2015)
9. Ngai, E.Y., R. Fuhrhop, J.R. Chen*, J. Chao, C.R. Bauwens, C. Mjelde, G. Miller, J. Sameth, J. Borzio, M. Telgenhoff, B. Wilson, “CGA G-13 Large-Scale Silane Release Tests – Part II. Unconfined Silane-Air Explosion,” *Journal of Loss Prevention in the Process Industries*, 36, 488-496 (2015).
10. P. A. Fomin, A. V. Fedorov, J. R. Chen, Parameters for Attenuation and Suppression of Detonation Wave with Inert Particles, *Chemical Engineering Transactions*, 31, 847-852 (2013)
11. Chen S. L., Lu P.T., Lee H. L., Lu C.H., Yuan S.Y., Tsai H. and Chen J.R., Risk management and regulatory control of toxic chemicals in Taiwan, *Chemical Engineering Transactions*, 31, 241-246 (2013)
12. A.V. Fedorov, P.A. Fomin, D.A. Tropin and J.-R. Chen, “Modeling of reflection of detonation and shock waves from a rigid wall in mixtures of flammable gas with chemically inert particles.” *Journal of Engineering Physics and Thermophysics*, 85 (3) 614-619 (2012).
13. H.J. Liaw, C.C. Chen, Y.C. Chen, J.R. Chen, S.K. Huang, S.N. Liu, “Relationship between flash point of ionic liquids and their thermal decomposition”, *Green Chemistry*, 14, 2001-2008 (2012).
14. A.V. Fedorov, P.A. Fomin, D.A. Tropin and J.-R. Chen, “Physicomathematical modeling of gas detonation quenching by chemically inert particles.” *Journal of Engineering Physics and Thermophysics*, 85(2)359-367 (2012).

15. A.V. Fedorov, P.A. Fomin, D.A. Tropin and J.-R. Chen “Parameters, limits, attenuation, and suppression of detonation in mixtures of an explosive gas with chemically inert microparticles.” *Journal of Engineering Physics and Thermophysics*, 85(2)368-381, (2012).
16. Chen, J. R., H.-Y. Tsai, J.-H. Chien, H.-J. Pan, “Flow and Flame Visualization Near the Upper Flammability Limits of Methane/Air and Propane/Air Mixtures at Elevated Pressures”, *Journal of Loss Prevention in the Process Industries*, 24, 662-670 (2011).
17. Soo, J.-C., Li, S.-R., Chen, J.-R., Chang, C.-P., Ho, Y.-F., Wu, T.-N., Tsai, P.-J. Acid Gas, Acid Aerosol and Chlorine Emissions from Trichlorosilane Burning Processes. *Aerosol and Air Quality Research*, 11, 323-330, 2011 (SCI)
18. Tsai, H. Y., S. W. Wang, S. Y. Wu, J. R. Chen, E. Y. Ngai, K. P. P. Huang, “Experimental Studies on the Ignition Behavior of Pure Silane Released into Air,” *Journal of Loss Prevention in the Process Industries*, 23, 170-177 (2010).
19. Chen, J. R., H. Y. Tsai, S. W. Wang, S. Y. Wu, E. Y. Ngai, K. P. P. Huang, “Ignition Characteristics of Steady and Dynamic Release of Pure Silane into Air,” *Combustion, Explosions and Shock Waves*, 46(4) 391-399 (2010).
20. Chen, J. R., Z. S. Huang, C. D. Liu and P. A. Fomin, “Experimental Studies of Ignition and Explosion in a Water Column Bubbling with Hydrogen and Oxygen, *Journal of Loss Prevention in the Process Industries*, 22, 7-14 (2009).
21. Fomin, P. A. and J. R. Chen, “Effect of Chemically Inert Particles on Parameters and Suppression of Detonation in Gases,” *Combustion, Explosions and Shock Waves*, 45(3) 303–313 (2009).
22. Chen, J. R., Z. S. Huang, C. D. Liu and P. A. Fomin, “Experimental Studies of Ignition and Explosion in a Water Column Bubbling with Hydrogen and Oxygen, *Journal of Loss Prevention in the Process Industries*, 22, 7-14 (2009).
23. Fomin, P. A. and J. R. Chen, “Effect of Chemically Inert Particles on Thermodynamic Characteristics and Detonation of a Combustible Gas,” *Combustion Science and Technology*, 181 (8) 1038-1064 (2009)
24. Fomin, P. A. and J. R. Chen, “Explosion Safety Aspects of Shock Wave Induced Condensation in a Fuel-Rich Gaseous Mixtures,” *Combustion Science and Technology*, 180, 1317-1333 (2008)
25. Peng, D. J., Y. Y. Chang, H. C. Wu, C. C. Tsaur, J. R. Chen, “Failure Analysis of a Silane Gas Cylinder Valve: A Case Study,” *Engineering Failure Analysis*, 15, 275-280 (2008)
26. Fomin, P. A. and Chen, J. R., “Shock Wave Induced Condensation in A Fuel-Rich Oxygen Containing Bubble in a Flammable Liquid,” *Chemical Engineering Science*, 63, 696-710 (2008)
27. Ngai, E. Y., K. P. P. Huang, J. R. Chen, C. C. Shen, H. Y. Tsai, S. K. Chen, S. C. Hu, P. H. Yeh, C. D. Liu, Y. Y. Chang, D. J. Peng, H. C. Wu, “Field Tests of Release, Ignition and Explosion from Silane Cylinder Valves,” *Process Safety Progress*, 26, 265-282 (2007).
28. Chen, J. R., H. Y. Tsai, P. C. Hsu, C. C. Shen, “Estimation of Waste Generation from Floods,” *Waste Management*, 27, 1717-1724 (2007)
29. Y. Y. Chang, D. J. Peng, H. C. Wu, C. C. Tsaur, C. C. Shen, H. Y. Tsai, J. R. Chen, “Revisiting of a Silane Explosion in a Photovoltaic Fabrication Plant,” *Process Safety Progress*, 26, 155-158 (2007)
30. Chen, J. R., H. Y. Tsai, S. K. Chen, H. R. Pan, S. C. Hu, C. C. Shen, C. M. Kuan, Y. C. Lee, C. C. Wu, “Analysis of a Silane Explosion in a Photovoltaic Fabrication Plant,” *Process Safety Progress*, 25, 237-244 (2006).

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32. Chen, J. R., C. M. Lee, "Safe Acetoxylation of Propylene: the Role of Oxygen," *Process Safety Progress*, **24**, 280-286 (2005).
33. Chen, J. R. and S. K. Chen, "Experimental Studies of Ignition and Explosion in Cyclohexane Liquid under Oxygen Oxidation Conditions," *Journal of Loss Prevention in the Process Industries*, **18**, 97-106 (2005).
34. Chen, J. R., C. H. Hung, K. S. Fan, T. C. Ho, F. L. Chen, J. J. Horng, S. C. Ho, W. D. Chen, "Emergency Response of Toxic Chemicals in Taiwan: The System and Case Studies," *Process Safety Progress*, **23**, 206-213 (2004).
35. Chen, J. R., and Y. T. Yang, "A Predictive Risk Index for Safety Performance in the Process Industries," *Journal of Loss Prevention in the Process Industries*, **17**, 233-242 (2004).
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39. Chen, J. R., "Characteristics of Fire and Explosion in Semiconductor Fabrication Processes," *Process Safety Progress*, **21**, 19-25 (2002).
40. Chen, J. R., C. Lee, C. Cheng, W. K. Chou and T. C. Ho, "Pilot-Scale Study of Multiphase Venting from a Vessel at Elevated Pressure and Temperature," *Process Safety and Environmental Protection*, **78B**, 434-444 (2000).
41. Sheu, L. J., J. D. Lin and J. R. Chen, "Numerical Analysis on the Hot Spot in Reactive Chemical Storage," *Journal of Loss Prevention in the Process Industries*, **12**, 125-136 (1999).
42. Ho, T. C., Y. S. Duh and J. R. Chen, "Case Studies of Incidents in Runaway Reactions and Emergency Relief," *Process Safety Progress*, **17**, 259-262 (1998).
43. Chen, J. R., S. M. Richardson and G. Saville, "Modelling of Two-Phase Blowdown from Pipelines- I. A Hyperbolic Model Based on Variational Principles", *Chemical Engineering Science*, **50**, 695-713(1995).
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45. Chen, J. R., S. M. Richardson and G. Saville, "A Simplified Numerical Method for Transient Two-Phase Pipe Flow," *Transactions of IChemE Chemical Engineering Research and Design*, **71A**, 304-306 (1993).
46. Chen, J. R., S. M. Richardson and G. Saville, "Numerical Simulation of Full-Bore Ruptures of Pipelines Containing Perfect Gases," *Process Safety and Environmental Protection*, **70B**, 59-69 (1992).