Henry J. Curran
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Brief Biography

Dr. Curran received his PhD degree from National University of Ireland, Galway (NUIG) in experimental and numerical studies of combustion kinetics in 1994. He served as a postdoctoral research scientist from 1994-1997 and research scientist in combustion modeling with C.K. Westbrook and W. Pitz from 1997 to 1999 at Lawrence Livermore National Laboratories (LLNL). In 1999, he returned to Ireland to take an appointment as a lecturer in Physical Chemistry at Galway-Mayo Institute of Technology while continuing to consult with LLNL and performing collaborative research in kinetics with Prof John Simmie at NUIG. He was appointed as an adjunct Lecturer at NUIG in 2001 and as a Lecturer in 2005.

Relevant Experience and Interests

Dr. Curran has over ten years of experience in developing comprehensive detailed kinetic models, thermochemical estimates, and estimating reaction rates for describing large carbon number hydrocarbons relevant to predicting real fuel behavior in energy conversion systems. His collaborative work with LLNL, Princeton, and others has contributed significantly to the construction and validation of detailed kinetic models presently used for large alkanes, cyclo-alkanes, and their reaction intermediates, as well as to oxygenated hydrocarbons. He has contributed especially to mechanistic insights and detailed kinetic modeling of low temperature and negative temperature coefficient behavior of large carbon number species. His experience in comprehensive, hierarchical model development provides much of the detailed modeling materials presently used in industry for emulating autoignition and combustion processes in energy conversion system applications.

Five Publication Relevant to the Present Subject Area

1. W. Metcalfe, W. J. Pitz, H. J. Curran, J P. Orme, J. M. Simmie, and C. K. Westbrook (2007). "The Development of a Detailed Chemical Kinetic Mechanism for Diisobutylene and Comparison to Shock Tube Ignition Times," *Proc. Combust. Inst.* 31, 377-384.
2. W. J. Pitz, C. V. Naik, T. Ní Mhaoldúin, H. J. Curran, J P. Orme, J. M. Simmie, and C. K. Westbrook (2007). "Modelling and Experimental Investigation of Methylcyclohexane Oxidation in a Rapid Compression Machine," *Proc. Combust. Inst.* 31, 267-275
3. J. P. Orme, H. J. Curran, and J. M. Simmie (2006). "An Experimental and Modelling Study of Methyl Cyclohexane Pyrolysis and Oxidation," *J. Phys. Chem. A* 110, 114–131.
4. H. J. Curran (2006). "Rate Constant Estimation for C1–C4 Alkyl and Alkoxy Radical Decomposition," *Int. J. Chem. Kinet.* 38, 250–275.
5. C. V. Naik, W. J. Pitz, C. K. Westbrook, M. Sjöberg, J. E. Dec, J. Orme, H. J. Curran, and J. M. Simmie (2005). "Detailed Chemical Kinetic Modelling of Surrogate Fuels for Gasoline and Application to a HCCI Engine," *Society of Automotive Engineers Publication*, SAE-2005-01-3741.

Other Selected Publications

1. J. Chen, T. A. Litzinger, and H. J. Curran (2005). "The Lean Oxidation of iso-Octane at Elevated Pressures," *Society of Automotive Engineers Publication*, SAE-2005-01-3734.
2. H. J. Curran, P. Gaffuri, W. J. Pitz, and C. K. Westbrook (2002). "A Comprehensive Modelling Study of iso-Octane Oxidation," *Combust. Flame* 129, 253–280.
3. J.-S. Chen, T. A. Litzinger, H. J. Curran (2001). "The Diluted Stoichiometric Oxidation of iso-Octane in the Intermediate Temperature Regime at Elevated Pressures," *Combust. Sci. Tech.* 172, 69–78.
4. C. K. Westbrook, W. J. Pitz, H. J. Curran, J. Boercker, and E. Kunrath (2001). "Chemical Kinetic Modelling Study of Shock Tube Ignition of Heptane Isomers," *Int. J. Chem. Kinet.* 33, 868–877.