Jui-kun Peng

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PROFESSIONAL EXPERIENCE

- **Postdoctoral Appointee,** Argonne National Laboratory, IL, 2/2005- present
  Analyze the system of hydrogen storage options including gaseous and liquid hydrogen storage, metal hydrides, chemical hydrides, and carbon-based and new materials. Assess improvements needed in material properties and system configurations to achieve hydrogen storage targets. Software developed and maintained includes GCtool, MHtool, and FCHtool.
- **Research Assistant,** IIT, Chicago, 9/2000-12/2004
  Optimal sensor, actuator, and operating point selections were investigated. New formulations, theorems and methods were developed. This research provides an efficient method to find the global optimal solutions for instrument and operating point selection problems.
- **Teaching Assistant**, IIT, Chicago, 1/2001-12/2004
  Help students with homework and computer programming assignments in undergraduate and graduate process control courses.
- **Research Assistant,** National Central University, Taiwan 7/1993-7/1995
  Microcapsules were prepared and studied. The drug loss and release rate of the microcapsules were investigated. The release time for twenty percent of drugs (T20) could be modified from 2 hours to 5 days. Operate and manage instruments, including GPC, SEM, UV, IR and Dissolution Tester.

EDUCATION

- Ph.D. in Chemical Engineering, **Illinois Institute of Technology,** Chicago, Illinois**,** 2004
- M.S. in Computer Science, **Polytechnic University,** Brooklyn, New York, 1999
- M.S. in Chemical Engineering, **National Central University**, ChungLi, Taiwan, 1995

AWARDS

- Honorable Mention, CAST Directors' Award for Best Poster, AIChE 2004

PUBLICATIONS AND PRESENTATIONS

- Peng, J. K. and H. Chen, “The Preparation of Microcapsules by using o/w Type Emulsion Nonsolvent-addition Phase Separation: Study of Release Rate and Drug Loss,” presented at the Fifteenth Annual Taiwan Conference on Polymer Science, Taiwan, June, 1995.
- Chmielewski, D. J., J. K. Peng and A. Manthanwar, “Convex Methods in Actuator Placement” in the Proceedings of the American Control Conference, Anchorage,

Alaska, vol. 6, pp. 4309-4314, 2002.

- Peng, J. K. and D. J. Chmielewski, “Identifying Sensor Performance Targets from a Systems Perspective” presented at the Annual Meeting of the AIChE, Indianapolis, Indiana, November 2002.
- Chmielewski, D. J. and J. K. Peng, “A Globally Optimal, Dynamic Based, Operating Point Selection Scheme for MPC” presented at the Annual Meeting of the AIChE, Austin, TX, November, 2004.
- Peng, J. K. and D. J. Chmielewski, “The Value of Sensor Networks for Advanced Process Control” presented at the Annual Meeting of the AIChE, Austin, TX, November 2004.
- Peng, J. K. and D. J. Chmielewski, “Optimal Sensor Network Design Using the Minimally Back-Off Operating Point Notion of Profit” in the Proceedings of the American Control Conference, Portland, Oregon, pp.220-224, 2005.
- Chmielewski, D. J. and J. K. Peng, “Covariance Based Hardware Selection for Infinite Dimensional Systems” presented at the Annual Meeting of the AIChE, San Francisco, CA, November 2006.
- Ahluwalia, R. K. and J. K. Peng, “MHtool: Metal-Hydride Hydrogen Storage System Analysis Tool,” DOE Metal Hydride Analysis Kick-Off Meeting, 29 Sept. 2005, Washington, DC.
- Ahluwalia, R. K., J. K. Peng and T. Q. Hua, “System Level Considerations for Hydrogen Storage,” Storage Systems Analysis Working Group Meeting, 18 Nov. 2005, Palm Springs, CA.
- Ahluwalia, R. K., J. K. Peng and T. Q. Hua, “On-Board Storage Systems Analysis,” DOE and FreedomCAR & Fuel Partnership Analysis Workshop, 25 Jan. 2006, Washington, DC.
- Ahluwalia, R. K., J. K. Peng, and G. Thomas, “Performance of On-Board Metal-Hydride Hydrogen Storage Systems,” Material Research Society (MRS) Meeting, Symposium Z: Hydrogen Storage Technologies, Boston, MA, Nov. 27-30, 2006.
- Ahluwalia, R. K., T. Q. Hua, and J. K. Peng, “On-Board Hydrogen Storage System Using a Liquid Carrier” FreedomCAR and Fuels Partnership Analysis Workshop, Columbia, MD, May 8-9, 2007.
- Ahluwalia, R. K., T. Q. Hua, and J. K. Peng, “On-Board Hydrogen Storage Systems for Liquid Carriers” (invited) MS&T, Detroit, MI, Sept. 16-20, 2007.
- Peng, J. K., A. Manthanwar and D. J. Chmielewski, “On the Tuning of Predictive Controllers: The Minimally Backed-off Operating Point Selection Problem,” Industrial Engineering Chemistry, Research, 44(20), pp.7814-7822, 2005
- Chmielewski, D. J. and J. K. Peng, “Covariance Based Hardware Selection, Part 1: Full State Information Actuator Selection,” IEEE Transactions on Control System Technology, 14(2), pp. 355-361, 2006.
- Peng, J. K. and D. J. Chmielewski, “Covariance Based Hardware Selection, Part 2: Simultaneous Sensor and Actuator Selection” IEEE Transactions on Control System Technology, 14(2), pp. 362-368, 2006.
- Ahluwalia, R. K., J. K. Peng and R. Kumar, “System Level Analysis of Hydrogen Storage Options” 2005 DOE Annual Progress Report, pp. 676-682, 2005.
- Ahluwalia, R. K., J. K. Peng, T. Q. Hua and R. Kumar, “System Level Analysis of Hydrogen Storage Options” 2006 DOE Annual Progress Report, pp.41-546,

2006.

- Ahluwalia, R. K., J. K. Peng, T. Q. Hua and R. Kumar, “System Level Analysis of Hydrogen Storage Options” 2007 DOE Annual Progress Report, pp.611-615, 2007.
- Ahluwalia, R. K., T. Q. Hua, and J. K. Peng, “Fuel Cycle Efficiencies of Different Automotive On-Board Hydrogen Storage Options” International Journal of Hydrogen Energy, 32(15), pp. 3592-3602, 2007.

PATENTS

- MHtool: Metal-Hydride System Analysis Tool (V.1.0), Ahluwalia, R. K., and J. K. Peng
- FCHtool: Fuel Cycle Analysis of Hydrogen Storage Options (V.1.0 and V.2.0), Ahluwalia, R. K., T. Q. Hua, and J. K. Peng