

Saeed Khaleghi Rahimian
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CURRICULUM VITAE

RESEARCH EXPERIENCE

Columbia University, New York, NY
Postdoctoral Scholar, Department of Chemical Engineering,
Advisor: Professor Alan C. West

August, 2012 – Present

EDUCATION

- **Ph.D., Chemical Engineering, 2012**
University of South Carolina
Thesis Title: “Optimization and State Estimation of Li ion cells Using Single Particle Model”
Advisor: Professor Ralph E. White
- **M.S., Chemical Engineering, 2006**
University of Tehran, Tehran, Iran
Thesis Title: “Dynamic Optimization using Continuation Algorithm”
Advisor: Professor Farhang Jalali Farahani
- **B.S., Chemical Engineering, 2003**
University of Tehran, Tehran, Iran
Thesis Title: “Carbon Nanotube Synthesis by chemical vapor deposition method in presence of catalyst and enhanced plasma in atmospheric pressure”
Advisor: Professor Abbas Ali Khodadadi

RESEARCH INTERESTS

Mathematical Modeling and Optimization of Chemical and Electrochemical Processes, Parameter and State Estimation, Model Reduction, Global Optimization, New Mathematical Methods for Solving System of Nonlinear Equations

HONORS and AWARDS

- Outstanding Graduate Student Award, University of South Carolina, Summer 2012.
- Electrochemical Society Battery Division Student Travel Grants, Spring 2012.
- Ranked 29th (top 0.5%) among 6000 participants in the Nationwide Chemical Engineering M.S. Examination, 2003.
- Best Student Award, Tehran University, 2002.
- Best Student Award, Tehran University, 2001.
- Ranked 1058th (top 0.5%) among 202,000 participants in the Nationwide University Entrance Examination, 1999.

JOURNAL PUBLICATIONS

- **Saeed Khaleghi Rahimian**, Sean Rayman, and Ralph E. White, “Extension of Physics-Based Single Particle Model for Higher Charge-Discharge Rates”, *Journal of Power Sources*, 224 180–194 (2013).
- **Saeed Khaleghi Rahimian**, Sean Rayman, and Ralph E. White, “State of Charge and Loss of Active Material Estimation of a Lithium Ion Cell under Low Earth Orbit condition using Kalman Filtering Approaches”, *Journal of the Electrochemical Society*, 159(6) A860–A872 (2012).
- Narges Kaveshgar, Nathan Huynh, and **Saeed Khaleghi Rahimian**, “An Efficient Genetic Algorithm for Solving the Quay Crane Scheduling Problem”, *Expert Systems With Applications*, 39(18) 13108-13117 (2012).
- **Saeed Khaleghi Rahimian**, Sean Rayman, and Ralph E. White, “Optimal Charge Rates for a Lithium Ion Cell”, *Journal of Power Sources*, 196(23), 10297–10304 (2011).
- **Saeed Khaleghi Rahimian**, Sean Rayman, and Ralph E. White, “Comparison of Single Particle and Equivalent Circuit Analog Models for a Lithium-Ion Cell”, *Journal of Power Sources*, 196(20), 8450–8462 (2011).
- **Saeed Khaleghi Rahimian**, Farhang Jalali, J. D. Seader, and Ralph E. White, “A Robust Homotopy Continuation Method for Seeking all Real Roots of Unconstrained Systems of Nonlinear Algebraic and Transcendental Equations”, *Industrial & Engineering Chemistry Research*, 50(15), 8892–8900 (2011).
- **Saeed Khaleghi Rahimian**, Farhang Jalali, J. D. Seader, and Ralph E. White, “A New Homotopy for Seeking All Real Roots of a Nonlinear Equation” *Computers & Chemical Engineering*, 35(3), 403-411 (2011).
- **Saeed Khaleghi Rahimian**, Sean C. Rayman, and Ralph E. White, “Maximizing the Life of a Lithium-Ion Cell by Optimization of Charging Rates”, *Journal of the Electrochemical Society*, 157(12) A1302–A1308 (2010).
- Jalali, F., Seader, J.D., & **Saeed Khaleghi**, “Global Solution Approaches in Equilibrium and Stability Analysis using a Homotopy Continuation Method in the Complex Domain”, *Computers & Chemical Engineering*, 32(10), 2333–2345 (2008).
- **Saeed Khaleghi**, Farhang Jalali. “Multiple Solutions in Stability Analysis Using Homotopy Continuation in Complex Space”, *Chemical Engineering Communications*, 194(9), 1241–1258 (2007).

CONFERENCE PRESENTATIONS

- **S. Khaleghi Rahimian**, S. Rayman, and R. White, (2012). State of Charge and Loss of Active Material Estimation of a Lithium Ion Cell under Low Earth Orbit condition using Kalman Filtering Approaches, Presented in ECS 221th Meeting.
- N. Kaveshgar, N. Huynh, and **S. Khaleghi Rahimian**, (2012). Solving Quay Crane-Scheduling Problem Using Genetic Algorithm in MATLAB, Presented in TRB 91st Annual Meeting.

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- **S. Khaleghi Rahimian**, S. Rayman, and R. White, (2011). Comparison of Single Particle and Equivalent Circuit Analog Models for a Lithium-Ion Cell, Presented in ECS 220th Meeting.
- **S. Khaleghi Rahimian**, S. Rayman, R. E. White, (2011). Optimal Charge Rates for a Lithium Ion Cell, Presented in AIChE Annual Meeting.
- **S. Khaleghi Rahimian**, and R. E. White, (2010). Maximizing the Life of a Lithium-Ion Cell by Optimization of Charging Rates. Presented in ECS 218th Meeting.
- **S. Khaleghi Rahimian**, F. Jalali, J. D. Seader and R. E. White, (2010). Development of a New Homotopy Method for Finding All Real Roots of Systems of Unconstrained Nonlinear Algebraic Equations. Presented in AIChE Annual Meeting.
- **S. Khaleghi**, F. Jalali, & J.D. Seader, (2007). Locating Bifurcation Points for Seeking All Real Roots to System of Nonlinear Equations with a New Homotopy, Accepted by AIChE Annual Meeting.
- **S. Khaleghi**, F. Jalali, & J.D. Seader, (2007). Reaching Isolates of Homotopy Path to Find All Real Roots of System of Nonlinear Equations by Locating Bifurcation Points at All Roots, Accepted by AIChE Annual Meeting.
- **S. Khaleghi**, P. Hajiani, & F. Jalali, (2007). New Strategy for Solving Optimization Problems by Seeking All Real Roots to Corresponding System of Equations with an enhanced Homotopy, Accepted by AIChE Annual Meeting.
- **S. Khaleghi**, & Jalali, F. (2006). Using Bifurcation branches in complex domain to get multiple solutions, Accepted by IASTED Conference.

WORK EXPERIENCE

- Development of Marun OTS project as a process engineer. Developed process model dynamically using INDISS software. (Marun is the largest Olefin plant in south of Iran. Project Cost: \$1,200,000), 2005-2009.
- Advance training course on dynamic simulation and INDISS software in 12 weeks, 2006.

TEACHING EXPERIENCE

- MATLAB tutor for graduate students, 2010-2011, *University of South Carolina*.
- Teaching Assistant in Chemical Reactor Design (ECHE 730), 2010, *University of South Carolina*.
- Teaching Assistant in Kinetics and Reactor Design, 2003-2005, *University of Tehran*.

PROFESSIONAL MEMBERSHIP

- American Institute of Chemical Engineers (AIChE)
- Electrochemical Society (ECS)

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REFERENCES

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- **Professor Ralph E. White**
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- **Professor J. D. Seader**
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