

# **RANDY SHURTZ**

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## **EDUCATION**

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**PHD, CHEMICAL ENGINEERING:** Brigham Young University - Provo, Utah

- Anticipated graduation date: April 2009
- Graduate School GPA: 3.91/4.0
- Research Topic: Coal Gasification
  - Mechanisms of soot formation from coal tar surrogates
  - Char production and gasification at high pressures

**B.S., CHEMICAL ENGINEERING:** Brigham Young University, April 2006

- Undergraduate GPA: 3.82/4.0
- Full-tuition scholarships received for eight consecutive semesters

## **WORK EXPERIENCE**

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**RESEARCH ASSISTANT:** April 2006-Present

Dr. Thomas H. Fletcher, Professor of Chemical Engineering, BYU

- Designed and installed a new pressurized flat-flame burner (PFFB) system
- Studied soot produced from coal tar surrogates on a flat-flame burner to derive soot formation mechanisms
- Will study char gasification kinetics at high temperature and pressure
- 4 conference papers

**RESEARCH ASSISTANT:** April 2005-April 2006

Dr. Merrill W. Beckstead, Professor of Chemical Engineering, BYU

- Identified sensitive reactions and dominant reaction pathways to improve and simplify chemical kinetic mechanisms for ammonium perchlorate-based propellants
- Presented 1 paper at the 2006 AIChE National Student Meeting
- Co-authored 1 paper presented at the 41st JANNAF Combustion Subcommittee Meeting

**RESEARCH ASSISTANT:** April 2004-April 2005

BYU DIPPR<sup>®</sup> (Design Institute for Physical Properties) Laboratory

- Researched and predicted the physical properties of esters, ketones, and naphthalenes (4 compounds)
- Made corrections and updates to the 48 properties in the DIPPR database (~10 compounds)

## **SERVICE AND PERSONAL DEVELOPMENT**

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**VOLUNTEER REPRESENTATIVE (MISSIONARY):** February 2000-February 2002

The Church of Jesus Christ of Latter-day Saints - Viña Del Mar, Chile

- Planned and conducted presentations for individuals and groups of up to 8 people
- Became a fluent speaker, reader, and writer of Spanish
- Trained 1 new volunteer and supervised 8 others

**EAGLE SCOUT**

## **TRAINING AND COMPETENCIES**

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**COMPUTATIONAL EXPERIENCE:**

- Programming numerical methods in VBA (Windows OS) and FORTRAN (Windows or UNIX OS)
- Combustion software: CFD (Fluent), NASA-LEWIS, NASA-CEA, EDWRDS, CHEMKIN, CPD, PCGC-3
- Other software: Mathcad, MS Excel, Aspen Plus

## **PUBLICATIONS AND PRESENTATIONS**

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1. Shurtz, R. C., "Modeling of Solid Rocket Propellants." Presented at the AIChE Annual Student Meeting, San Francisco, CA (Nov. 12-17, 2006).
2. M.L. Gross, R.C. Shurtz, M.G. Hawkins, M.W. Beckstead, and W.C. Hecker, "Development of an Updated Model for Monopropellant AP Combustion: Methodology and Results," presented at the 41st JANNAF Combustion Subcommittee Meeting, San Diego, CA (Dec. 4-8, 2006).
3. Pugmire, R. J., T. H. Fletcher, R. C. Shurtz, B. Burgener, and J. M. Sowa, "Soot Formation Pathways under Coal Gasification Conditions using 2,6-dimethylnaphthalene as a Coal Tar Surrogate," presented at the Clearwater Coal Conference, Clearwater, FL (June 10-15, 2007).
4. Shurtz, R. C., T. H. Fletcher, B. Burgener, J. M. Sowa, and R. J. Pugmire, "Soot Formation Pathways from a Coal Tar Surrogate under Coal Gasification Conditions," presented at the International Conference on Coal Science and Technology, Nottingham, England (Aug. 28-31, 2007).
5. Shurtz, R. C., T. H. Fletcher, M. S. Solum, and R. J. Pugmire, "Soot Formation Pathways From Coal Tar Surrogates Under Coal Gasification Conditions," presented at the AIChE National Conference. Topical 2: New Frontiers in Energy Research, #9 - Advances in Gasification Research, Salt Lake City, UT (Nov. 5, 2007).
6. Shurtz, R. C., T. H. Fletcher, M. S. Solum, and R. J. Pugmire, "Soot Formation Pathways From Coal Tar Surrogates Under Coal Gasification Conditions," presented at the 22<sup>nd</sup> Annual ACERC Conference, Provo, UT (Feb. 26-27, 2008).