Shane R. Reynolds

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Objective

I am a Ph.D. candidate in Chemical Engineering at Washington State University focusing my thesis on developing ligand derivatives for the surface of gold nanoparticles to understand their role in nanoparticle stability, catalytic capability, and separability in high pressure tunable solvents.

Education

Ph.D. Chemical Engineering, Washington State University, August 2013-expected May 2017
B.S., Chemical Engineering, Washington State University, May 2012

Experience

- ***Research Assistant***: Washington State University—Pullman, WA **January 2014-present**
  - Synthesis of gold nanoparticle catalysts.
  - Separation of nanoparticles using tunable solvent system.
  - Characterization of nanoparticles using TEM, UV-vis, TGA, NMR.
  - Performed catalytic reactions with nanoparticles and determined relevant kinetic parameters.
- ***Teaching Assistant***: Washington State University—Pullman, WA **August—December 2013**
  - Oversaw a once per week recitation session for undergraduate transport phenomena class.
  - Designed problems and graded homework for undergraduate transport phenomena class.
  - Held office hours for undergraduate fundamentals of chemical engineering, and transport
  - phenomena class.
- ***E & J Gallo*****:** Corporate Engineering Intern—Livingston, CA **February—July 2013**
  - Performed full cost estimate on project to update and replace current distillation and boiler system.
  - Maintained current P&IDs and created equipment lists for entire project.
  - Completed mass and energy balances and communicated install contract to replace steam injector.
- ***E & J Gallo*****:** Winery Systems Engineering Intern—Livingston, CA **June—November 2012**
  - Conducted daily troubleshooting on equipment to address downtime issues.
  - Improved equipment operator logs utilizing Visual Basic for Applications to increase effectiveness and equipment yield.
- ***AICHE Reaction Car Chair*****—**Pullman, WA **April 2011—April 2012**
  - Oversaw design and development of car.
  - Delegated tasks and maintained schedule of events.
  - Led our team to a victory at the regional competition and placement at the national competition.

Publications

- Reynolds, S., Rood, J., Markland, K., Saunders S. R. "Separations of Catalytically Active Nanoparticles Using Selective Extractions in Tunable Solvents." *In Preparation*.

Awards & Proficiencies

- Graduate and Professional Student Association Award of Excellence for Outstanding performance as a Teaching Assistant at Washington State University: Fall 2013.
- UV-visible spectrophotometry to monitor reactions and size nanoparticles.
- Transmission electron microscopy to image nanoparticles.
- FTIR spectroscopy used to observe ligand structure changes while bonded with nanoparticles.
- Thermogravimetric analysis for determination of metal concentration for catalytic measurements.
- ^{13}C & ^{1}H NMR reaction monitoring and structure identification post synthesis reactions.
- Matlab for general problem solving and thermodynamic simulation.
- ImageJ to size nanoparticles imaged using TEM.