

Postdoctoral Research Scholar

Research Engineer Engineer

Present & Previous positions

- 2017 Present** - **Postdoctoral Research Scholar (Fulbright Fellowship)** at Chaire ABI - Agro Biotechnologies, Pomacle, France
- Design and execute sustainable processes towards the development of an integrated multiproduct biorefinery based on the valorization of oleaginous biomass (Mustard Branand Canola Seeds)
 - Develop applications for the extracted biomass components (fat, sinapic acid, lignin, celluloses, minerals, proteins) and perform a life cycle analyses for the feasibility of the process developed
- 2016 – 2017** **Project Architect (Manager)** PreScouter, Inc.
- Lead and manage teams and projects for technology discovery and matchmaking for companies and nonprofits.
 - Key industries served include: Agriculture, Nanotechnology, Water Purification, Automotive, and Semiconductor, Customer Relationship Management e.t.c
- 2015 – 2016** **Research Scientist/Chemist** at 525 Solutions (Start-up) with University of Alabama, Tuscaloosa, AL, USA
- Designed, and supervised experiments for complex process development/scale up efforts on the extraction of biopolymers (from biomass) using ionic liquids
 - Increased overall process efficiency/financial yield by improving the reaction efficiency of different unit operations, minimizing waste and implementing recycling techniques
 - Developed novel biomaterials for applications to improve the company's product portfolio
- 2010- 2014** **Graduate Research Scientist/Engineer** at North Carolina State University, Raleigh, NC, USA
- Successfully collaborated and led a group of multi-disciplinary scientists and engineers to develop the procedures and analytical techniques for a novel biomass processing method (based on lignin removal)
 - Optimized the process to 85% lignin removal efficiency (in comparison to the industry average of ~30%) and ~98% recyclability for the ionic liquids, by employing green chemistry/engineering techniques
 - Mentored eight research assistants by introducing them to experimental/analytical techniques as they improved their problem solving and communication skills
- 2008 – 2010** **Research Assistant** at The University of Maryland, College Park, MD, USA
- Project 1: Prepared and executed procedures aimed at developing an efficient anti-cancer delivery system using pH-responsive alumina particles functionalized with silane coupling agents (for the drug Doxorubicin)
 - Project 2: Modeled and visualized nitrogen oxide (NOx) emissions using a simulation program and satellite retrieved data, and proposed corrections to the current model using exhaustive regression and statistical analyses

2009

Research Assistant at Iowa State University, Ames, IA, USA

- Successfully applied metabolic flux analyses toward increasing the soybean lipid (fat/oil) for potential biodiesel production
- Employed extensive regression analyses with chromatographic and spectroscopic techniques to determine optimal soybean growth conditions for high lipid content

Education

2010 – 2014 Doctor of Philosophy in Chemical and Biomolecular Engineering, North Carolina State University

2010 – 2012 Master of Science in Chemical and Biomolecular Engineering, North Carolina State University

2006 – 2010 Bachelor of Science in Chemical Engineering, The University of Maryland

Scientific production

Publications in peer-reviewed journals :

- [1] **Protic Ionic Liquids for Lignin Extraction—A Lignin Characterization Study** Achinivu E. International Journal of Molecular Sciences, December 2017, Accepted
- [2] **Biomass Storage: Small Solutions for a Big Problem** Achinivu, E.. PreScouter Journal: Advanced Energy and Feedstocks [Online], 2016 <http://www.prescouter.com/2016/07/biomass-storage-solutions/> (accessed July 18th 2016)
- [3] **Lignin extraction from biomass with protic ionic liquids** Achinivu E. C., Howard R. M., Li G., Gracz H., Henderson W. A. Green Chem., 2014, 16, 1114-1119

Skills

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| ✓ MS Office Suite | ✓ Graphic Design (Photoshop) | ✓ Chemical Modeling (MM2) |
| ✓ Mathematical Modeling (Matlab, Maple) | ✓ Computer Aided Design (ChemCAD, ProEngineer) | ✓ Experimentation/Analytical Techniques |
| ✓ Method development, data analysis | ✓ Material Processing/Characterization | ✓ Physical chemistry, Organic chemistry |
| ✓ Pilot Scale Operations | ✓ Process Development | ✓ Process Optimization |
| ✓ Project Management | ✓ Lab Management | ✓ Mentoring/Team Leadership |
| ✓ Budgeting/Cost Estimation | ✓ Formal Presentation (written/oral) | ✓ Safety and quality user regulations |

Language

French : Basic Language

English : Professional/Native