

# Tyrone Wells, PhD

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## Objective

*Seeking a challenging job within an industrial setting performing detailed characterizations; an ideal position will offer diverse tasks and the opportunity to contribute as a member of a team.*

## Experience

2009-Present Graduate Research Assistant, Professor Arthur J. Ragauskas,  
Georgia Institute of Technology

### Research Projects:

- **"Trees into Fat"**

*Developed, led research, and published innovative data regarding the use of bacteria to convert woody biomass into biodiesel.*

Proficient and knowledgeable with microbial adaptation/fermentation equipment and technique, lignocellulose pretreatment processes, and laboratorial-to-industrial scale pulping and paper making.

- **"Broadening the Availability of Carbon Fibers"**

*Researched, published and patented a novel ultrasonic methodology for rapid polymerization and thermostabilization of lignin for carbon fiber development.*

Developed high proficiencies with various spectroscopic, chromatographic, and thermogravimetric characterization strategies and apparatus. Work has been awarded the 2013 Gunnar-Nicholson Fellowship, providing research funding for a year at Chalmers University of Technology in Gothenburg, Sweden to further investigate and provide technical seminars regarding this innovative methodology (2013-2014).

## Education

Columbus State University 2004-2008  
**B.S. Chemistry with Honors**

Georgia Institute of Technology 2009-2014  
**Ph.D. Biochemistry w/ minor in Paper Science Engineering**  
(expected Dec. 2014)

## Skills

- Spectroscopic: **NMR** ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{31}\text{P}$ ), **UV-Vis**, **FTIR**, **NIR**
- Chromatographic: **GC/MS**, **GPC**, **HPLC**
- Thermogravimetric: **TGA**, **DSC**
- Misc.: X-Ray Diffraction (**XRD**), Scanning Electron Microscopy (**SEM**), and Hg Porosimetry

## Publications & Patent

Tyrone Wells and Arthur J. Ragauskas. *Biotechnological opportunities with the  $\beta$ -ketoacid pathway*. Trends in Biotechnology (2012) 30(12), 627-637.

Tyrone Wells, Matyas Kosa and Arthur J Ragauskas. *Polymerization of Kraft lignin via ultrasonication for high-molecular-weight applications*. Ultrasonics Sonochemistry (2013), 20(6), 1463-1469.

Wells, Tyrone. *Broadening the Availability of Carbon Fibers with Lignin*. Paper360 May/June (2013) 30.

Kerstin Jedvert, Merima Hasani, Tyrone Wells, and Hans Theliander. *Analyses of wood components in mild steam explosion liquors from spruce*. Submitted to Nordic Pulp & Paper Research Journal. March 2014.

Tyrone Wells, Zhen Wei, and Arthur Ragauskas. *Bioconversion of Lignocellulosic Pretreatment Effluent via Oleaginous Rhodococcus opacus DSM1069*. Submitted to Biomass and Bioengineering. March 2014.

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Patent: Method for Increasing the Molecular Weight of Lignin from Pine via Ultrasonication. (GTRC ID 5794). SN 61/696,936. Filed September 5, 2012.

## Recent Public Speaking

"Trees into Fat," 2013 TAPPI Student Summit (by Personal Invitation of Larry Montague, President and CEO of TAPPI). Raleigh, North Carolina. January 21, 2013.

"Bioconversion of Lignin into Biodiesel," 2013 Institute of Paper Science Members Conference. Atlanta, Georgia. April 19, 2013.

"Optimizing Lignin for Sustainable Carbon Fibers," Chalmers University of Technology. Gothenburg, Sweden. April 7, 2014

"Ultrasonic Thermostabilization of Lignin," Södra Cell Värö Pulp Mill. Värö, Sweden. April 20, 2014

"Green Chemistry and Sustainability," Swedish Embassy of the United States. Stockholm, Sweden April 24, 2014.

## Fellowships and Organizations

Paper Science Engineering Fellow  
Gunnar-Nicholson Exchange Fellow

Phi kappa Phi Honor Society  
TAPPI Member (2012 - ongoing)

## References

Professor Arthur J. Ragauskas | School of Chemistry and Biochemistry | Georgia Institute of Technology, Atlanta, GA | (404) 894-9701 | arthur.ragauskas@chemistry.gatech.edu

Professor Preet Singh | School of Materials Science and Engineering | Georgia Institute of Technology, Atlanta, GA | (404) 894-6641 | preet.singh@mse.gatech.edu

Professor Yulin Deng | School of Chemical & Biomolecular Engineering | Georgia Institute of Technology, Atlanta, GA | (404) 894-5759 | yulin.deng@ipst.gatech.edu