



# A Student's Perspective

Sarah Hodges



# About Sarah

- From Knoxville, TN
- 3<sup>rd</sup> Year Biochemistry Major
- President of SPORES
- Research at CAER since May 2016
  - Environmental and Coal Technologies Group
  - Biofuels and Environmental Catalyst Group

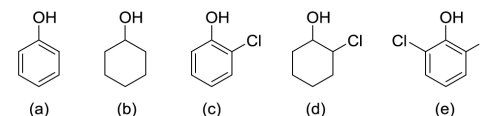




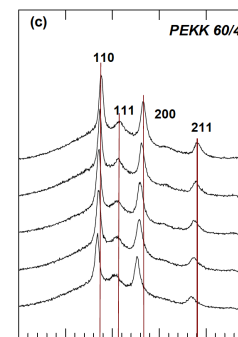
# From the Classroom

- MSE 201 – Materials Science in Engineering
- CHE 230 & CHE 232 – Organic Chemistry 1 and 2
- CHE 226- Analytical Chemistry
- PHY 232- Physics 2

4. For the following set of compounds below, which compound is the most acidic?



## XRD: In-Class Exercise



$$n\lambda = 2d\sin\theta$$

$\lambda$  = wavelength (1.54Å for Cu K $\alpha$ )

Orthorhombic:

$$\frac{1}{d^2} = \frac{h^2}{a^2} + \frac{k^2}{b^2} + \frac{l^2}{c^2}$$

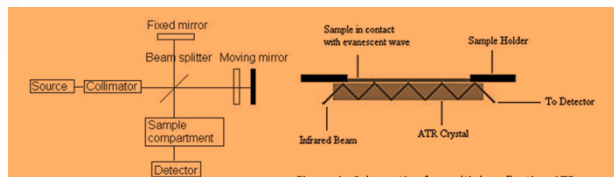
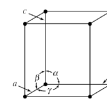


Figure 3: FT-IR block diagram

Figure 4: Schematic of a multiple reflection ATR module

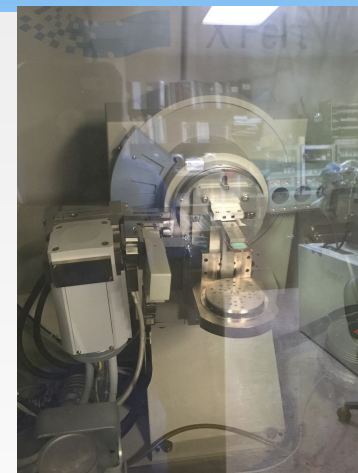


# To the Lab



Cellulose Samples after chemical treatment.  
Organic Chemistry  
Analytical Chemistry

Cement Samples undergoing  
strength testing.  
Physics  
Materials Science Engineering



XRD Machine  
Analytical Chemistry  
Organic Chemistry  
Materials Science Engineering



# Because of CAER

## Awards

- 2016 University of Kentucky Office of Undergraduate Research Summer Research Grant
- 2017 International Research Experience for Undergraduates
- Runner Up- Best Poster Award French American Workshop on Translational Chemistry
- 2017 NSF EPSCoR Research Scholar
- 2018 International Research Experience for Undergraduates

## Publications

- International Research Experience for Undergraduates Video
- CAER 101 Video
- UK Undergraduate Research Program Opens Door to International Opportunity
- Preparing 2 Publications on 2016-2018 Research



# Because of CAER (cont.)

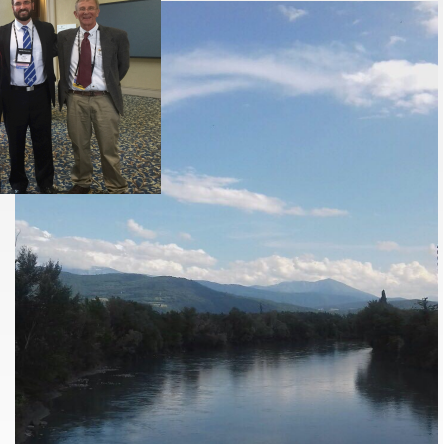
- Presentations
  - 2017 University of Kentucky Showcase of Undergraduate Research (Poster)
  - 2017 KY-WV LSAMP Symposium (Poster)
  - 2017 World of Coal Ash Conference (Poster)
  - 2017 French American Workshop on Translational Chemistry (Poster)
  - 2017 Louis Stokes Midwest Center for Excellence Conference (Poster and Oral)
  - 2018 KY-WV LSAMP Symposium (Poster)
  - 2018 American Chemical Society National Conference (Oral and 2
  - 2018 National Conference on Undergraduate Research





# Indirect Effects and Future Plans

- Amazing Mentorship
- Traveling:
  - Washington D.C., Indianapolis, Oklahoma City, New Orleans, France, The Netherlands
- Broad Network
- Graduate School



**LSU**