

The Prospective Use of FTIR and Surface Tension in Measuring Concentrations

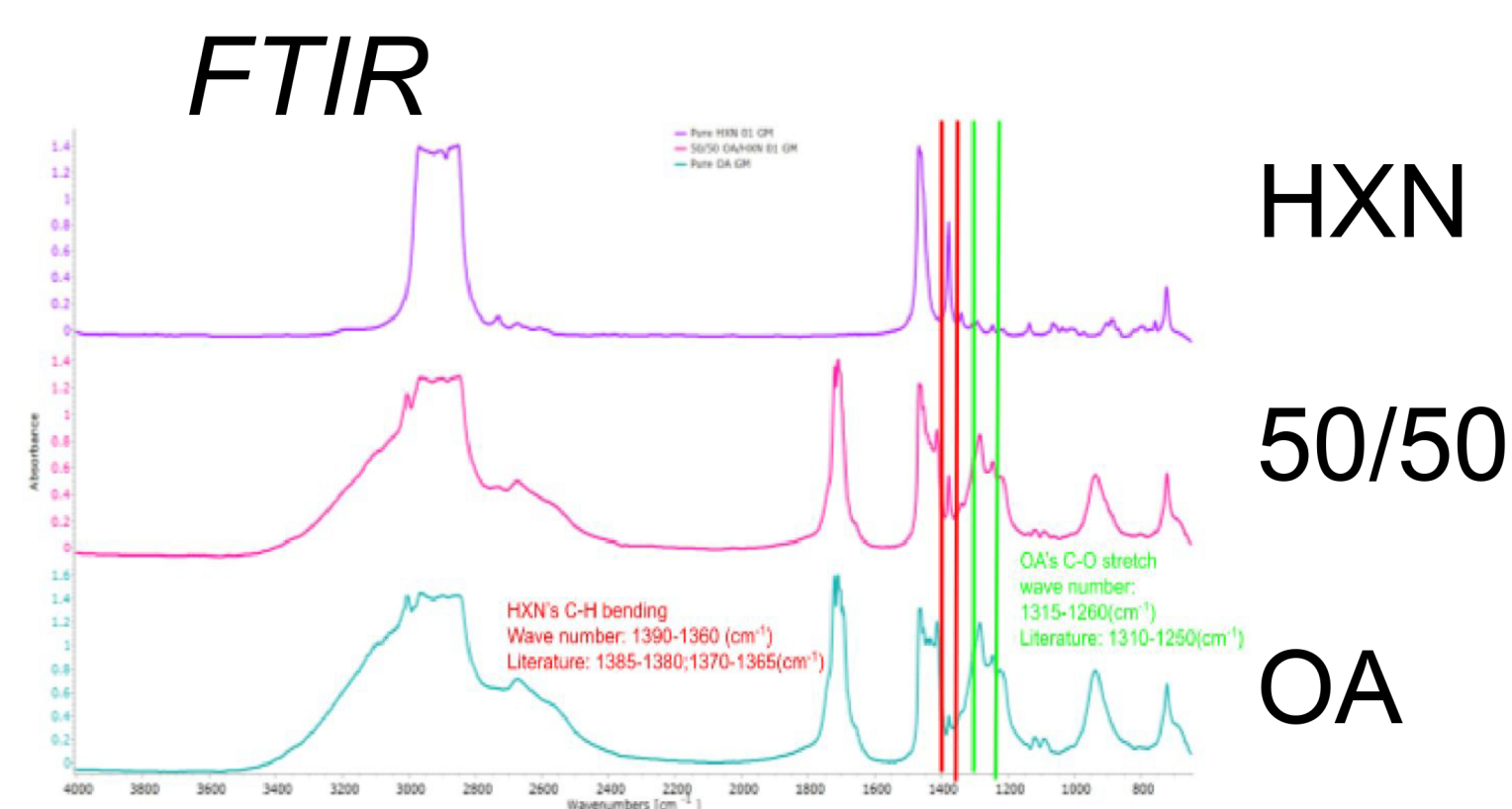
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Goal Provide evidence that Fourier transform infrared (FTIR) spectroscopy and surface tension can be used to confirm a mixtures concentration.

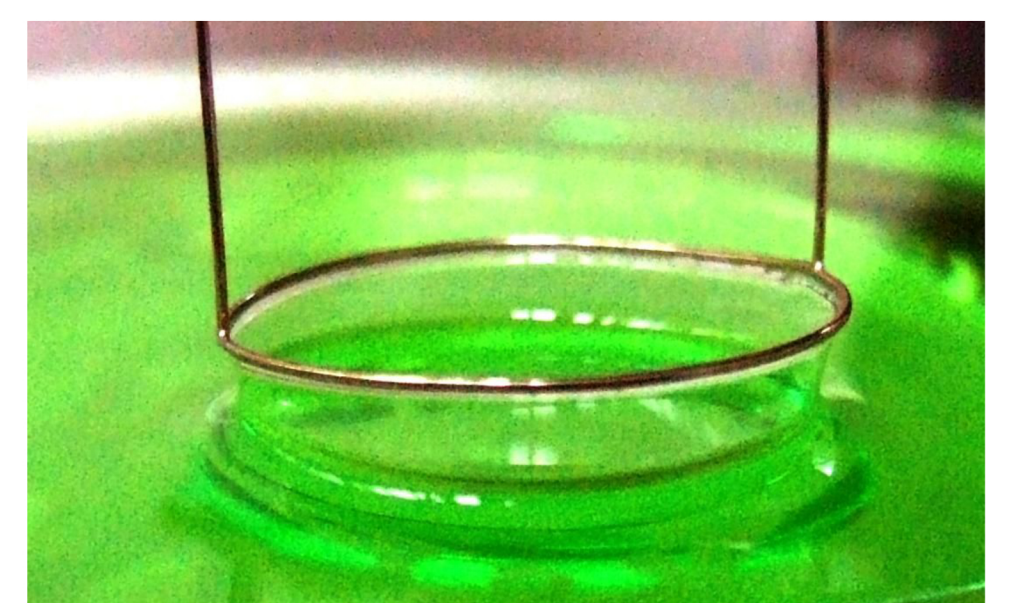
Approach

Materials

Pure Oleic Acid (OA)
 Pure Hexane (HXN)
 Pure Acetonitrile (ACN)
 OA/HXN
 OA/ACN

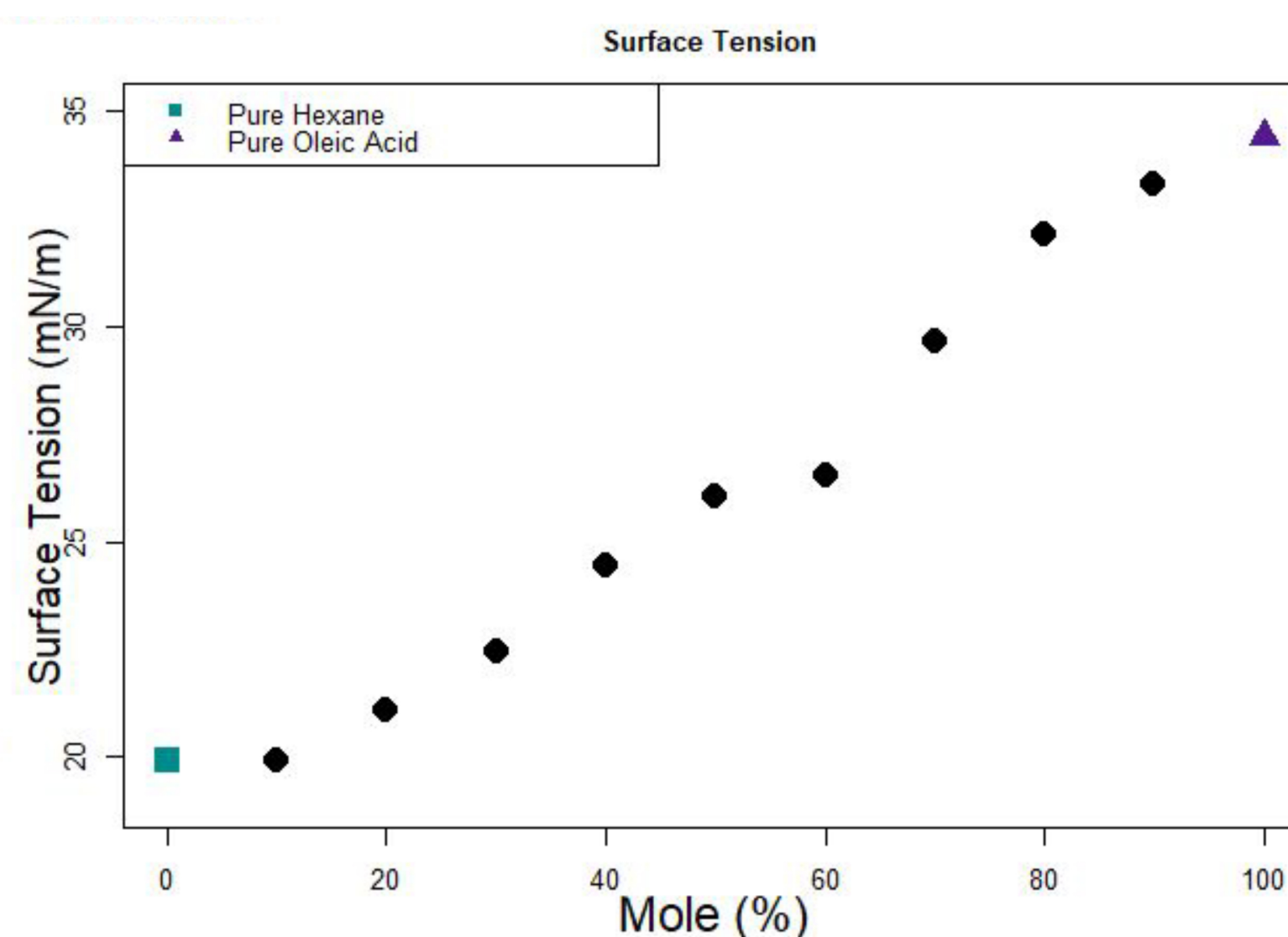
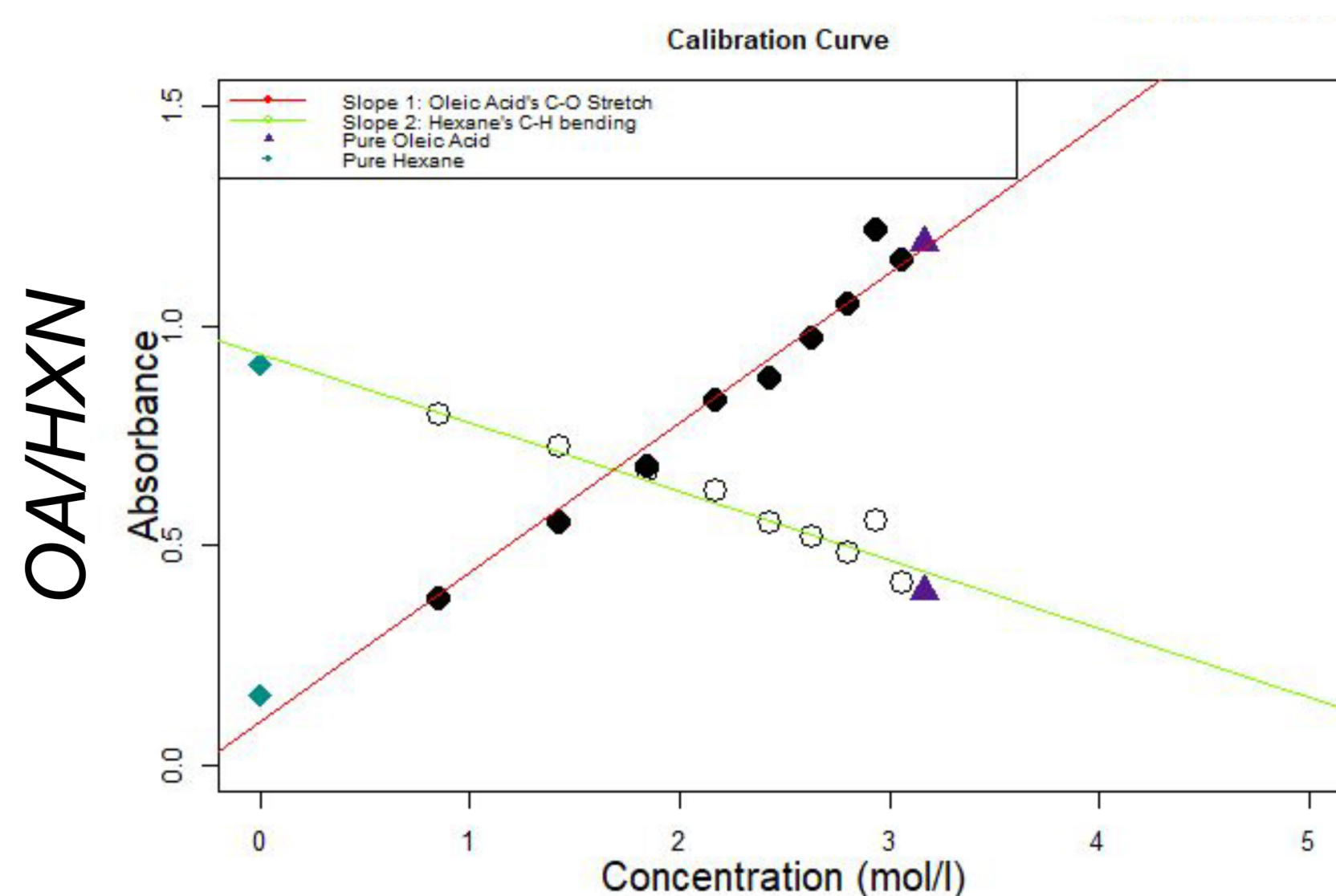


Surface Tension



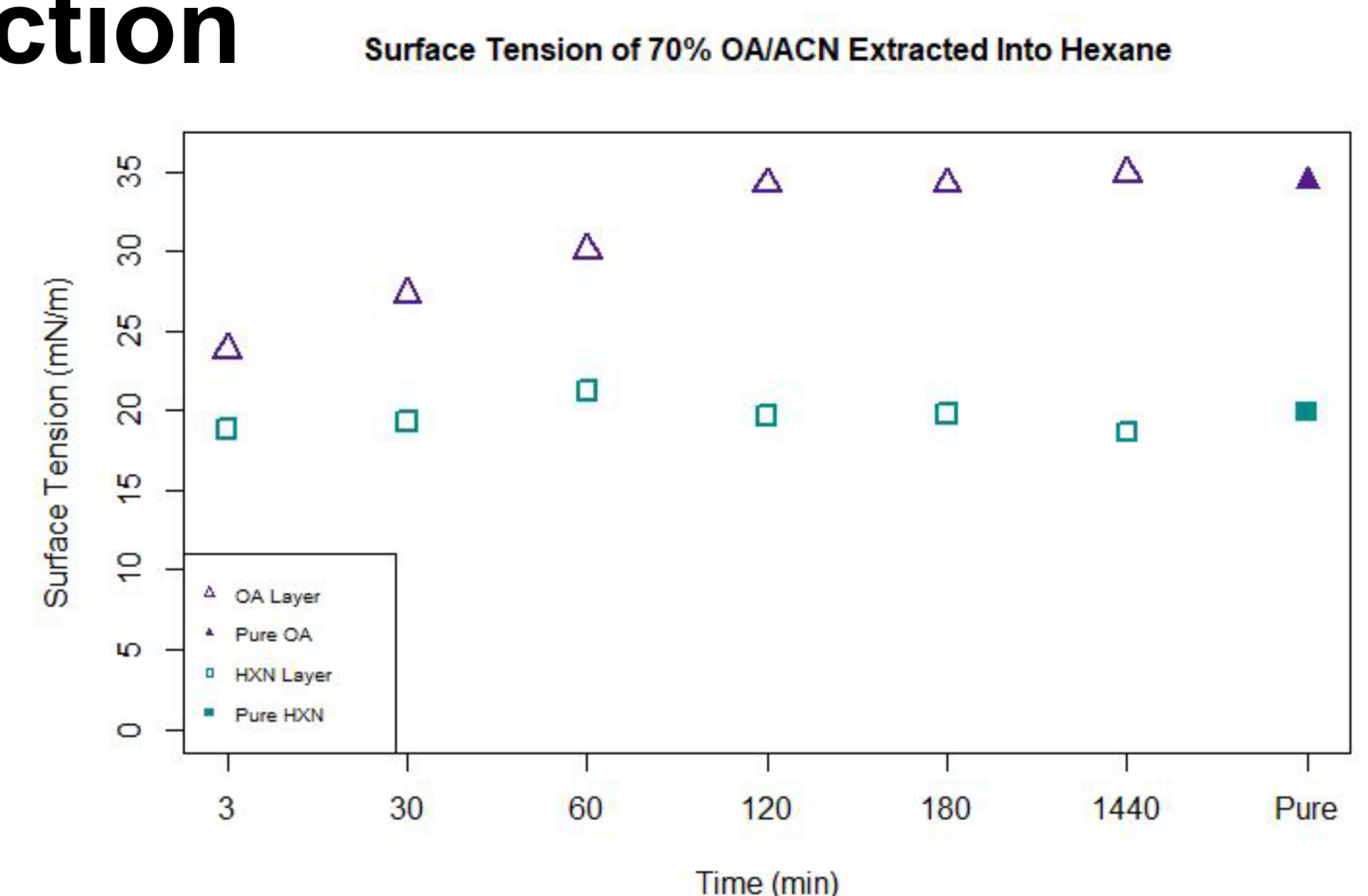
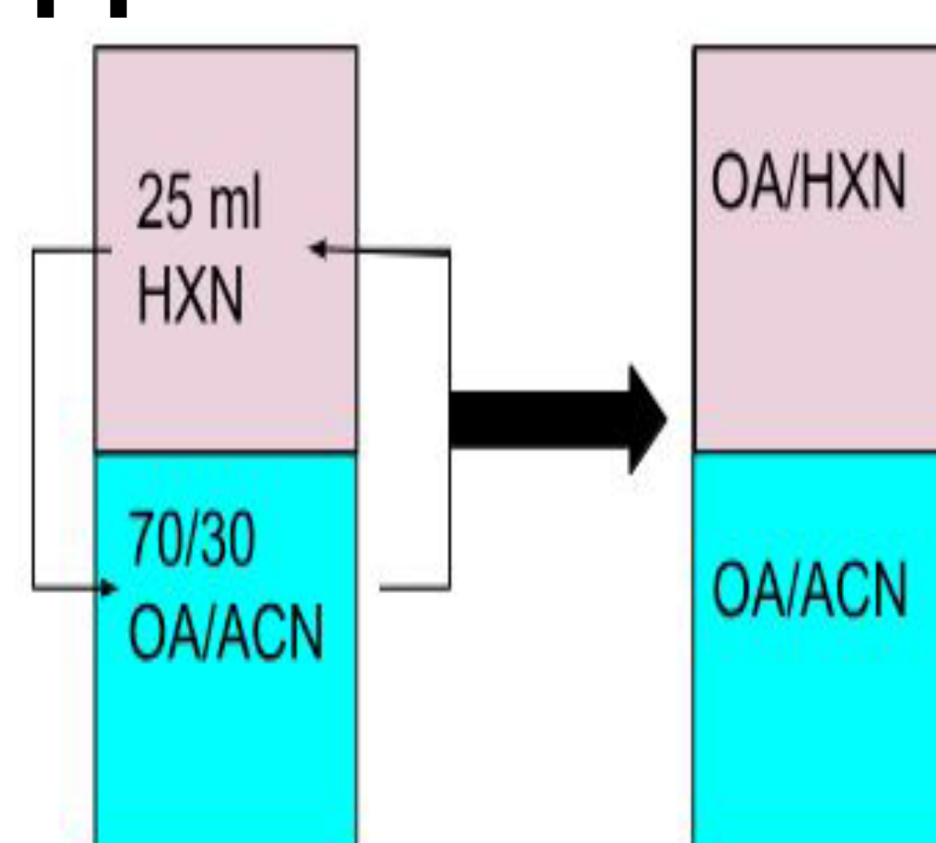
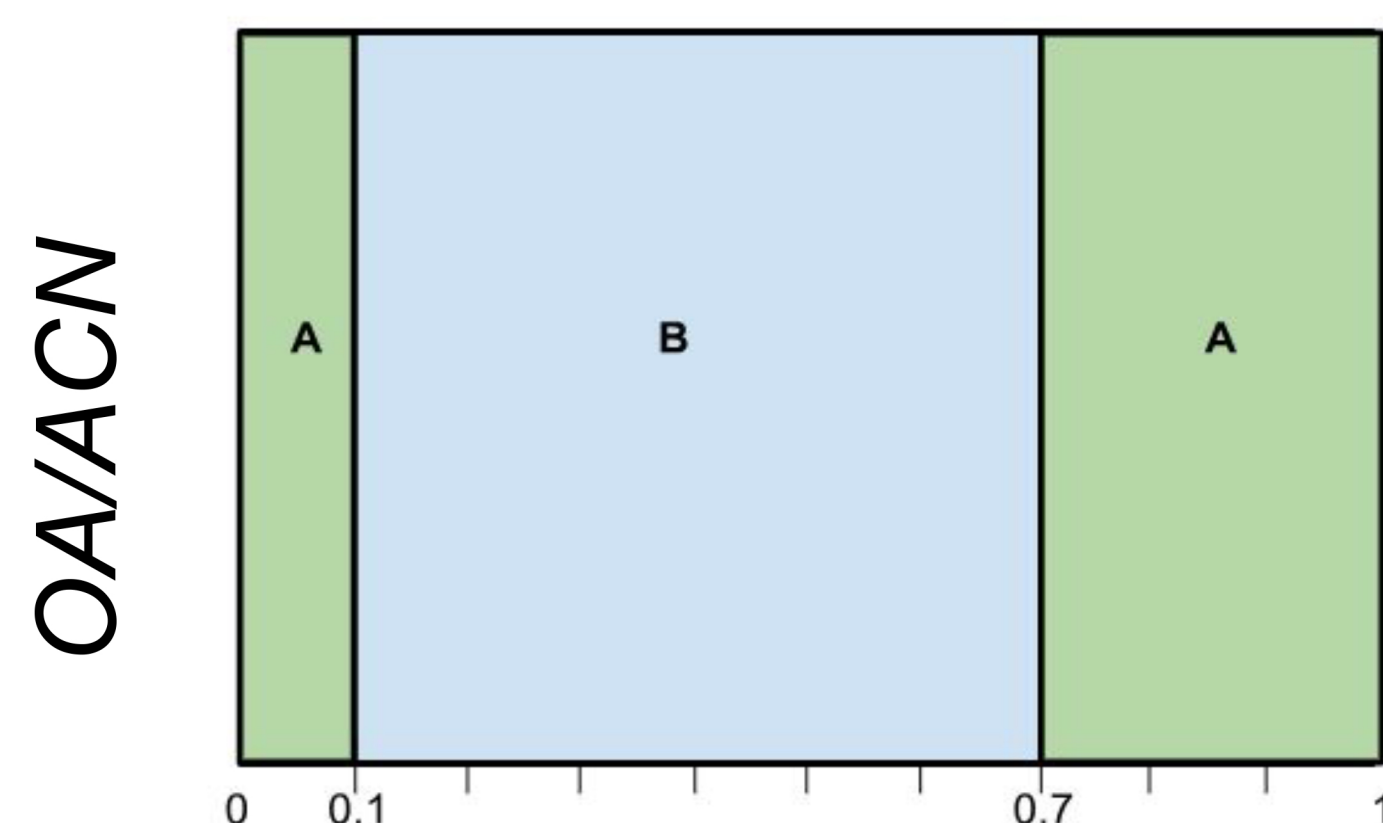
Du Noüy Ring [1]

Results



Success!
 Calibration curve created for FTIR.
 Preliminary calibration created for surface tension.

Application - Extraction



Discovery!

Two phase region B between single phase regions A. Confirmed after the fact by source in 1952 [2].

Success!

Tracked OA concentrations in each phase.

Future Work

The results show promise for a continuation in an independent study for Fall 2023.

References

- [1] "Du Noüy ring method," *Wikipedia*, Jan. 05, 2023. Accessed: Aug. 25, 2023. [Online]. Available: https://en.wikipedia.org/w/index.php?title=Du_No%C3%BCy_ring_method&oldid=1131681582
- [2] C. W. Hoerr and H. J. Harwood, "The Solubilities of Oleic and Linoleic Acids in Common Organic Solvents," *J. Phys. Chem.*, vol. 56, no. 9, pp. 1068–1073, Sep. 1952, doi: 10.1021/j150501a008.

Acknowledgements

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