

## Departments of Physics Colloquium

### ALCHIM: Using $^1\text{H}$ NMR to measure the Length of Fatty Acids

**Dr. Joseph Sachleben**

Biomolecular NMR Core Facility

The University of Chicago

**Friday, February 26, 2016**

**1:30-2:30 PM**

**Venue: CP197, MMC**



**Abstract:** Lipids play critical roles in human health. Identifying fatty acids in a complex mixture from tissue extracts by nuclear magnetic resonance spectroscopy is a daunting challenge, because most saturated and unsaturated fatty acids have very similar NMR spectra. We have developed a technique, Aliphatic Chain Length by Isotropic Mixing (ALCHIM), to address this problem.  $\text{CH}_2$  chain length in fatty acids is measured with a selective TOCSY technique by the mixing time dependence of transfer to the other end of the  $\text{CH}_2$  chain. This technique is demonstrated on purified saturated and unsaturated fatty acids as well as lipid samples extracted from mouse adipose tissue. The possibility of using this method in mixtures of fatty acids of different lengths is also examined.

**Biography:** Joseph Sachleben is the Technical Director of the Biomolecular NMR Core Facility at the University of Chicago. He has extensive experience in NMR technique development, theory, and applications in both the solid and liquid state. He received his BA in Chemistry and MS in Biochemistry from the University of Chicago and his Ph. D. in Physical Chemistry from the University of California, Berkeley. He has applied NMR spectroscopy to problems in materials science, such as semiconductor nanocrystals and perovskite ferroelectrics, environmental chemistry, and in biochemistry.

*The event is free and open to the public.*

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