

Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Synthesis and Characterization of Lithium Carboxylates for Use in Liquid Organic Scintillator Fast Neutron Spectrometers MELISSA SCHMITZ, Le Moyne College — Aqueous solutions of enriched lithium salts emulsified within liquid organic scintillators have been used for fast neutron spectrometry. However, these emulsions can undergo phase instabilities at loading fractions above a few percent of lithium by mass, which gives rise to poor optical performance. We propose an alternative loading method that directly dissolves long-chain lithium carboxylates into liquid organic scintillator which could potentially avoid the deleterious effects of emulsification. We discuss the synthesis of lithium dodecanoate, lithium octanoate, and lithium hexanoate. We further characterize the loading of a these carboxylates within the liquid scintillator cocktail Ultima Gold AB and a comparable scintillator formulation lacking surfactants in terms of solubility and light transmittance properties.

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Date submitted: 25 Jul 2016

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