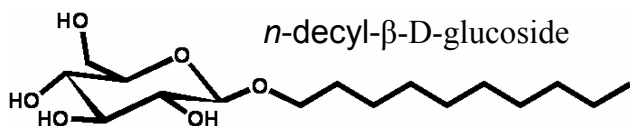
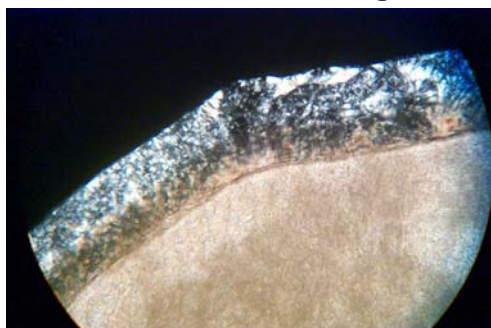


Determination of the Binary Lyotropic Liquid Crystal Phases Formed by *n*-Decyl- β -D-Glucoside in Water

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Polarized Light Microscopy of decyl-glucoside with a water concentration gradient



Results The characteristic curves for the micellar, lamellar, and cubic phases have been determined. The position of these curves is within 10 nm of those found for the octyl- and nonyl-glucoside and water systems. A preliminary phase diagram for the system of decyl-glucoside and water was developed based on analysis involving the fitting of the characteristic curves to the collected spectra.

Future Work It is necessary to examine additional samples, particularly those at high weight percent glucoside, in order to fully understand the phase diagram. In addition, a further study of the phase separation at low weight percents would be intriguing.

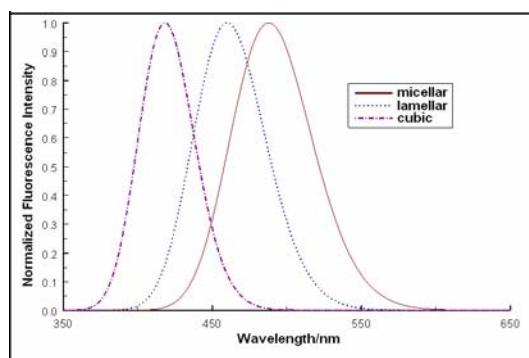
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Background Alkyl-glucosides are biologically relevant surfactants which form lyotropic liquid crystal phases in water. We hope to understand the effect of increased alkyl chain length, with the octyl- and nonyl- systems having already been characterized.

Approach Polarized Light and Fluorescence Microscopy are used in addition to fluorescence spectrophotometry to determine the phases present at various compositions. The spectra obtained from the spectrophotometry are analyzed using PeakFit to determine the location of the fluorescence of different phases.

Characteristic Phase Curves for the decyl-glucoside/water system



Preliminary Phase Diagram for the decyl-glucoside/water system

