

Quantitative alcohol determination using infrared spectroscopy for industrial and educational use

Infrared spectrophotometers are traditionally qualitative instruments. The exploration of quantitative use has not been well documented and has potential in both industrial and educational applications.

In the educational setting, this technique will provide students the opportunity to investigate multiple applications of FT-IR. The technique will support investigations on product yield evaluation which allows students to evaluate the success of reactions. As a concentration quantification tool, the method will offer a validation for traditional techniques.

In the industrial setting, alcohol concentration quantification is highly regulated for the wine, beer, pharmaceutical, and hygiene product industries. The standard tools for measuring alcohol content are hydrometers and refractometers. Both tools are highly subjective to temperature, other constituents, and user proficiency. The development of a procedure that provides non-subjective numerical data is highly desired.

This presentation will offer promising results on the use of an infrared spectrophotometer as a quantitative tool for measuring alcohol content in a solution.