

## **Analysis of water content in soap formulation using Fourier Transform Infrared (FTIR) spectroscopy.**

### **ABSTRACT**

A rapid, sensitive, and non-time consuming method of Fourier Transform Infrared (FTIR) Spectroscopy at wave number of 3600 - 3200  $\text{cm}^{-1}$  has been used for determination of water content in soap samples. The developed method was comparable to AOCS Ca 2c-25 method. A chemometrics partial least square (PLS) was used for constructing a calibration model. The 'leave-one-out' technique was used for cross validation. The correlation between water content using FTIR and AOCS in soap formulation existed a good relationship with coefficient of determination ( $R^2$ ) value of 0.923. This study revealed that FTIR spectroscopy combined with the PLS calibration technique is fast and accurate for quantitative analysis of water content in soap samples.

**Keyword:** FTIR spectroscopy; Partial least square; Soap; Water content.