Introduction:

The purpose of this study was to develop a calibration for the measurement of fat in cream.

Procedure:

19 samples of Polish cream were prepared by placing 100mls into a glass petrii dish, levelling the cream by use of a vibrating plate for 10 seconds to produce an even pathlength. The samples were then scanned over the wavelength range of 720nm to 1100nm collecting 10 scans per sample. The samples were then redone and the scanning process repeated. The spectra were uploaded into NTAS (NIR Technology Australia Software) and Partial Least Squares Regression (PLS) was used to develop a calibration for Fat.

Results:

Figure 1, below, shows the NIT spectra, over the wavelength range of 720nm to 1100nm, for the 19 samples of Cream.
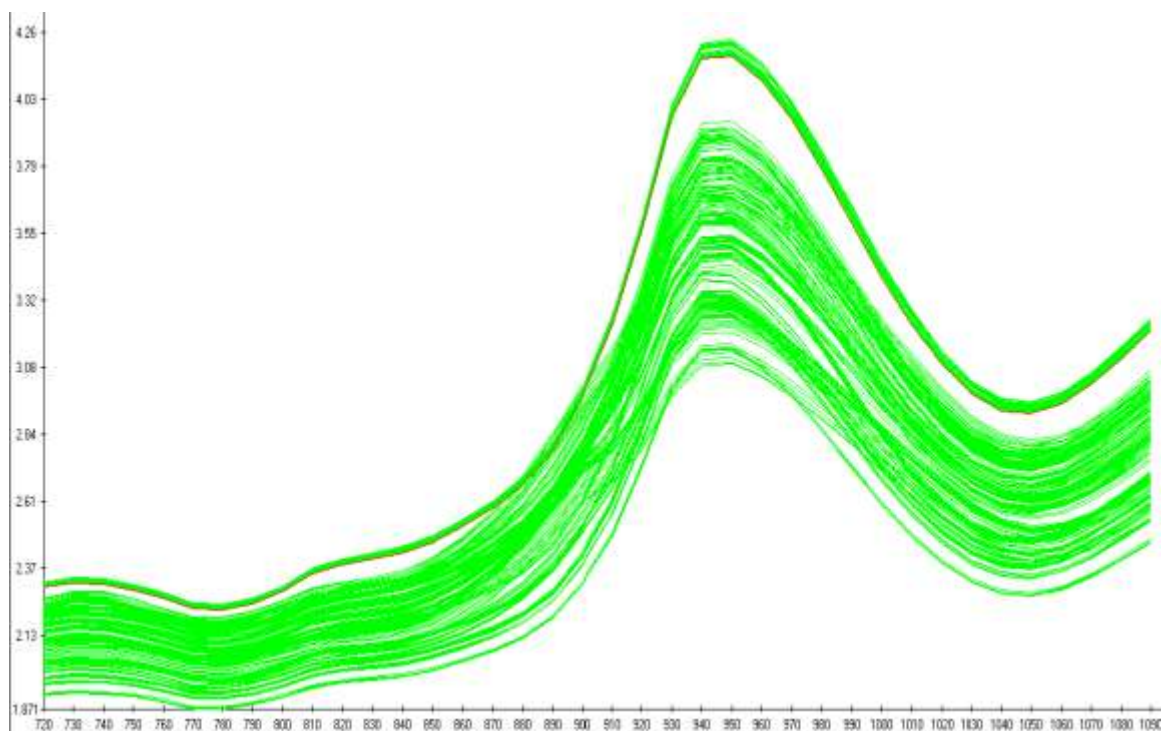

Figure 1: Plot of NIR Spectra for Cream.

Figure 2 shows the calibration statistics for the NIR Fat values versus the reference Fat value. The Standard Error of Calibration is 0.63% with a correlation (R^2) of 0.99.
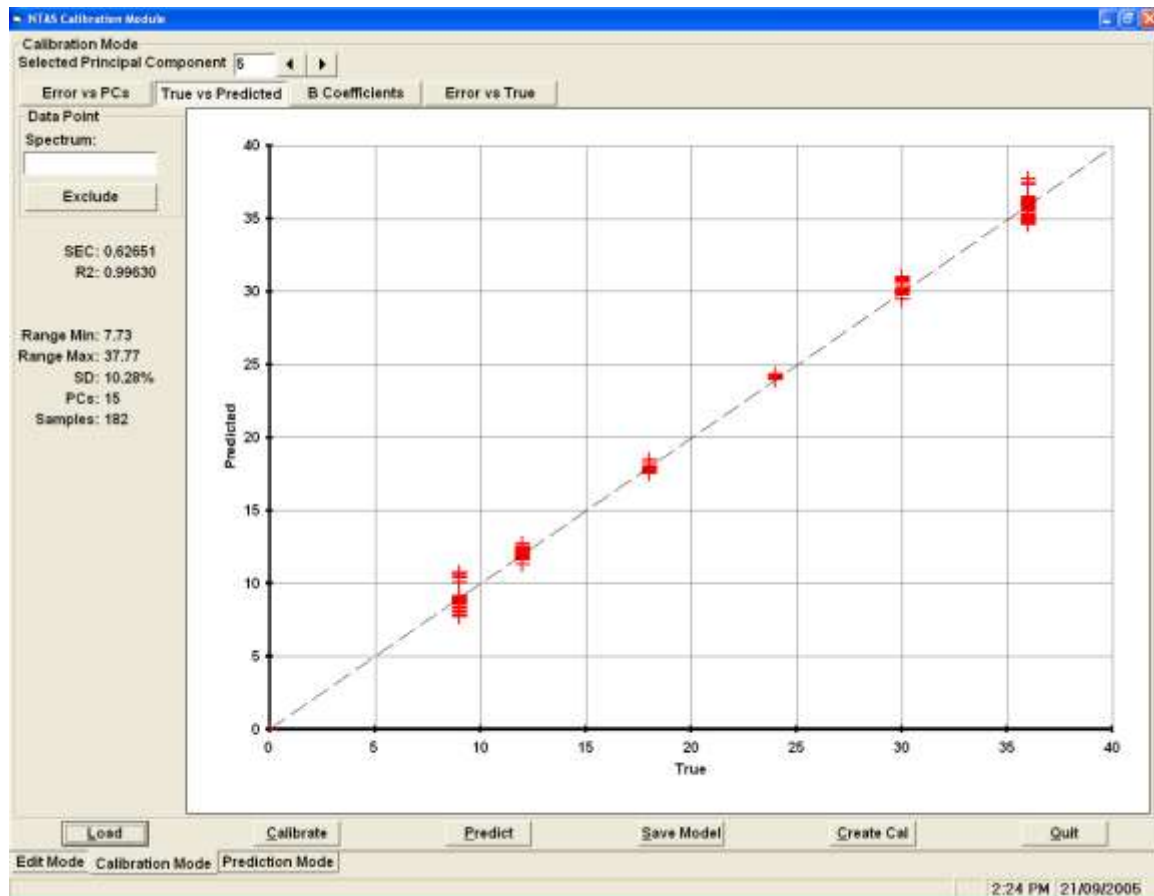

Figure 2: Plot NIR Predicted Fat value vs. Reference Fat value.

Conclusion:

It can be seen in figure 2 that the Series 3000 Food Analyser can be calibrated to measure the Fat values of Polish produced creams. The laboratory reference data for the Fat values in these creams was reported to only 1%. Therefore, an inherent error of ±0.5% from the reference method does affect the overall reliability of the calibration. Despite this potential error the calibration shows excellent linearity and good predictability. Therefore, any improvement in the reference testing methodology will only help to enhance the existing calibration further reducing any error in prediction.