

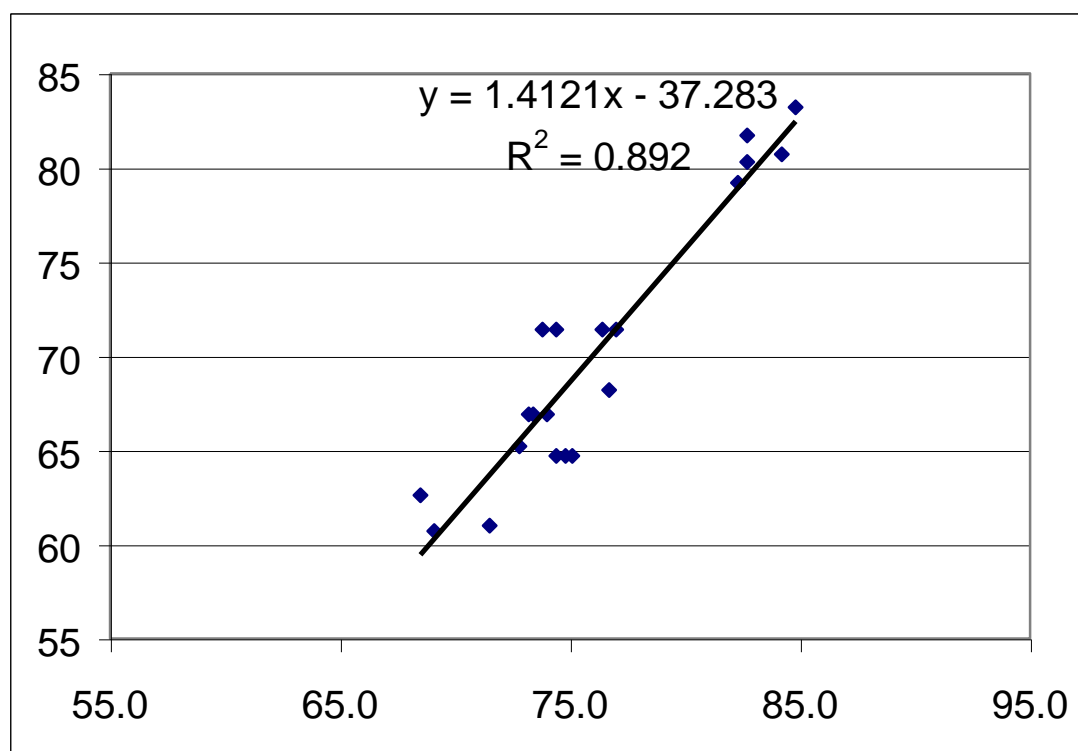
# Application Note 28: Evaluation of Chemical Lean Analysis: NIR vs Microwave



## Introduction:

An existing Chemical Lean calibration model was used to evaluate the performance of the NIT-38 Meat Analyser against a second company's meat samples analysed for CL using the Microwave method.

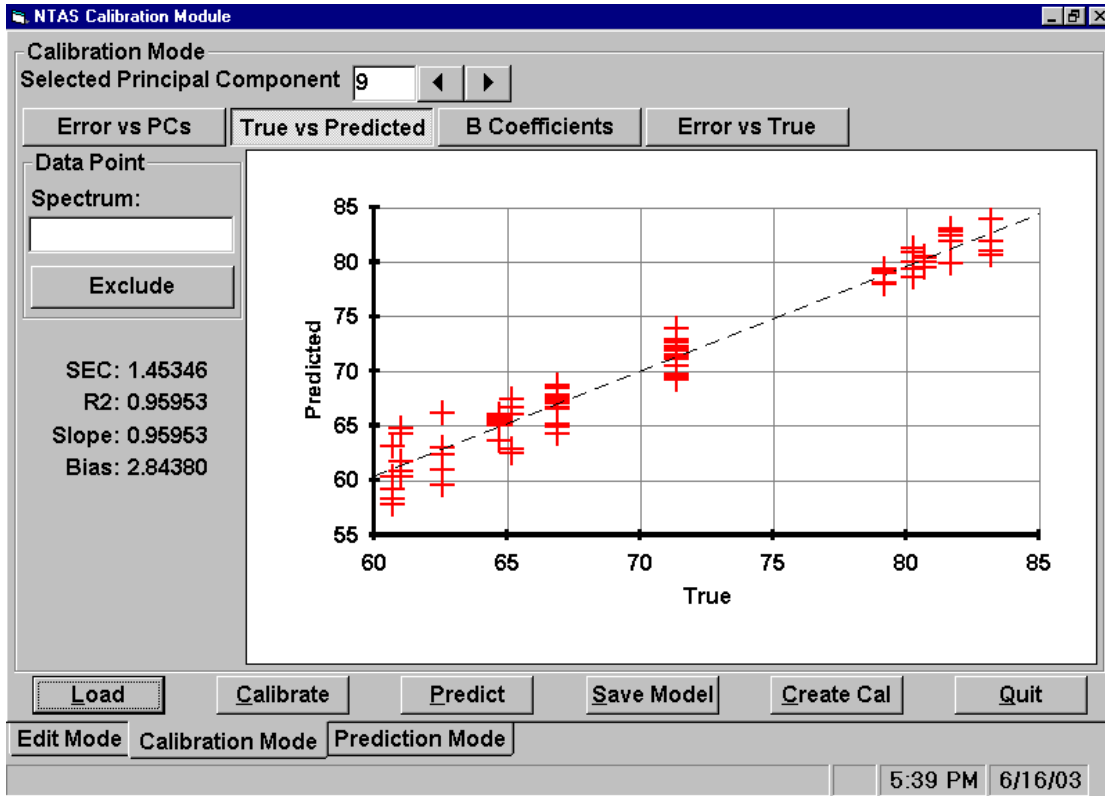
The first plot shows the relationship between the existing NIR calibration vs the Microwave method. The R<sup>2</sup> of .892 is not too bad but the scatter is high and the error is approximately 2.3 units. Our experience is that the two should agree to approximately 1 unit.



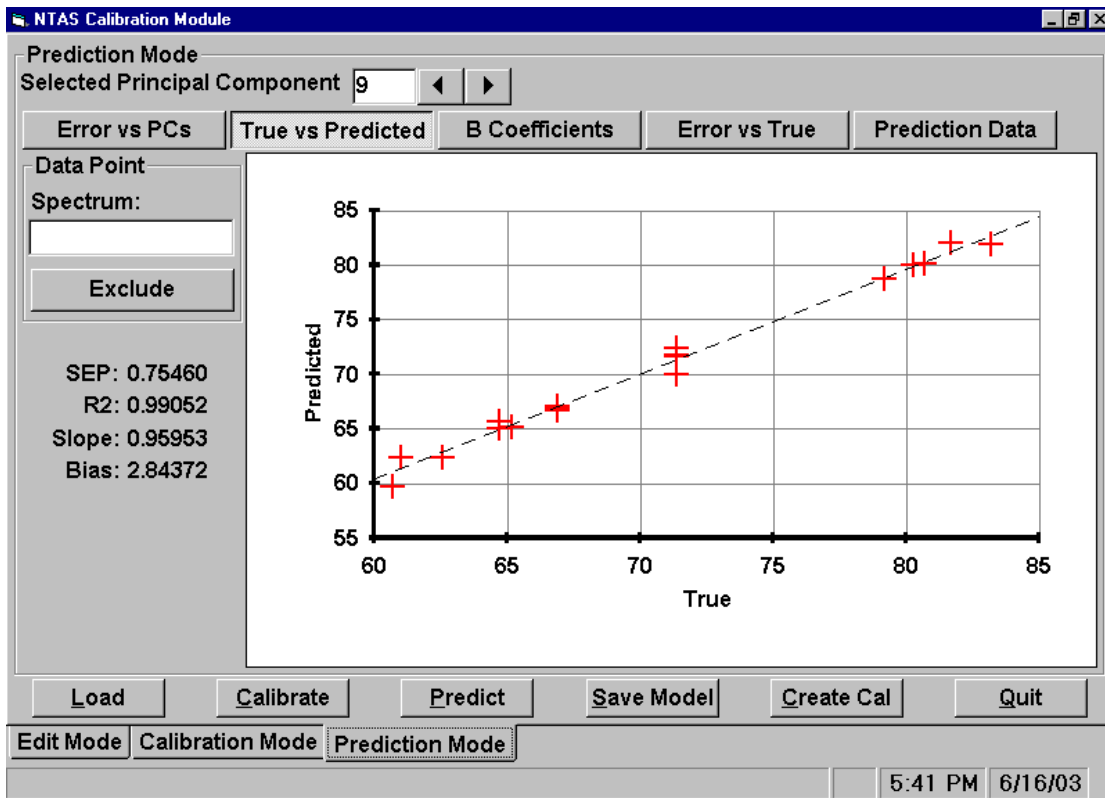
Plot of existing NIR Calibration for Chemical Lean vs the Microwave Method

The next two plots show the result of calibrating the NIT-38 Meat Analyser against the Microwave method. The first plot is the original calibration data. I have used the 5 scans saved for each sample. As such there is a considerable amount of scatter. This is to be expected because there is going to be a lot of variation in the sample, as well as sample packing variations. Note the SEC(Standard Error of Calibration) is approximately 1.4 units and the R<sup>2</sup> = 0.97. This is very good.

The last plot shows the effect of applying the calibration against the average spectra. The SEC is now 0.75 and the R<sup>2</sup> = 0.99.



Plot of NIR vs Microwave Chemical Lean Calibration Data



Plot of NIR vs Microwave Chemical Lean, Prediction Data