

SOURCES OF NON-LINEARITY IN NIR SPECTRA OF SCATTERING SAMPLES

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In general, NIR reflectance spectra (whether recorded using $\log(1/R)$ or the Kubelka-Munk function) are not linear functions of the concentration of the absorbers which we are measuring. There are several causes for this non-linearity, the most commonly cited one being front surface reflection.

However, non-linearity also arises from the effects of particle size, sample thickness, void fraction, and experimental arrangement. In this talk, we will attempt to isolate the effects of the various causes, and show the effects of each, using both theoretical calculations and actual data. The listener should then be able to assess where we stand in our quest to produce "linear" data through pre-processing and/or alternate collection schemes.