

Abstract Submitted
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Investigating the Beer-Lambert Law in a Cavity-Enhanced Spectroscopic Method ZANE THORNBURG, KARL FEIERABEND, SUSAN LEHMAN, The College of Wooster — Incoherent broad-band cavity-enhanced absorption spectroscopy has been used for high sensitivity measurements of weak transitions in solution. When the method has been used to make Beer-Lambert plots, the linear range has been observed to be significantly truncated and the dynamic range extended. This is preventing the use of this method for accurate quantitative measurements of the absorbance of weak signals in solution. We hypothesize that the behavior observed in the Beer-Lambert plots can be explained by accounting for losses per pass due to the cavity enhancement. Experimentation to create the Beer-Lambert plots described has been done varying the concentration of weakly absorbing analytes, such as methanol and toluene in the range of red light, as well as varying the size of the cuvette, effectively varying the path length of light traveling through the liquid-phase sample. The results of the experimentation have been compared to the predicted trend of the Lambert-Beer law.

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