

# MATHEMATICAL TREATMENT USING SPECTROPHOTOMETRY TO DETERMINE THE UNKNOWN CONCENTRATION OF A RANDOM SOLUTION

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## **Abstract**

Concentration is one of the primitive aspects in chemistry, which describes the extent of abundance of a solute in a given solution. Determining the concentration of a solution that does not has a chemical formula and with unknown molecular weight is one amongst the difficult topics. In this study, we have analyzed the concentration of such solutions using a comprehensive mathematics along with Beer – Lambert law for the UV spectrophotometer results. Experimental studies were conducted using the standard solutions of Biochar, Coir, Wood bark and Sawdust those prepared by mixing the raw substrates with water at 1:2 ratio. The solutions were prepared using the specimens extracted from same *Coccus nucifera* tree to verify that the prepared concentrations of solutions would be in same range since each of them contains similar type of organic content. The objective of the study has been achieved by proving that the concentration found using this novel approach for each specimens are almost equal since the specimens are from same origin. A comprehensive understanding in finite integrals is compulsory to get proficiency with this method. Furthermore, this approach can be successfully used to find the concentration of any random solutions such as to find the concentration at a cup of morning coffee. The benefits of this novel model has vast scientific scopes in future at resolving several queries related to medical, commercial, scientific and industrial issues related with concentration of solutions.

**Keywords:** *Concentration, Beer – Lambert law, UV spectrophotometer, finite integral*