

Scanner as a Substitute for Photospectrometer

Many colorimetric experiments are analyzed only in a qualitative way in class because of not having the necessary material for a better analysis. Our project proposes the use of a scanner to quantitatively analyze those experiments in a very simple way that can be easily demonstrated to students in class. For that we present a program we wrote that does everything from calibration to output of graphs and protocols of the results of the experiment. The experiments are easily done in 3 steps. Firstly the device must be calibrated scanning some patterns whose properties we know. By doing this we create a graph associating the RGB (Red Green Blue) values we get from the scanner to the property we want to analyze. After that, we scan the sample whose properties we do not know, and using the graph we created, the property of the unknown sample is interpolated. Finally, we use the program to create a complete HTML protocol of our experiments row. We have also implemented a function that approximates, given the RGB value of the pattern, the wavelength of the maximum of the spectrum received by the device (scanner or digital camera). Our program can be used for many applications such as determining the concentration of a colorant or an ionic complex in a mixture. This can be applied to the calculus of the concentration of an element in a metal, for example to determine how much copper there is in a cent-coin.

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