

New Analytical Method of Detergent by Dyeing Cloth

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We have developed a new analytical method of detergent by dyeing cloth without using any organic solvents. We have examined several kinds of cloth were dyed in various chemical dyes in different concentrations of detergent. Here, sodium dodecyl sulfate (SDS) and a commercial detergent (KAO brand, made in Japan) were used for a comparison. A hand made reflection photometer was also prepared in very cheap price and used to determine the intensity of color on dyed cloth.

As the results, the color intensity was changed cooperated to the change of detergent concentration. The more interesting is that, the trend of color intensity could be increased or decreased depends on the types of cloths and dyes used in the process. The results also showed that one type of cloths, that is Cashimilon Acrylic, gave clear difference of color intensity compared to other cloths. With Cashimilon Acrylic, the color intensity was increased or decreased when it was dyed in the different types of dyes and in the present of different concentration of detergent (following Figures). They were indicated that the interactions between detergent molecules, dye molecules and cloth polymers are involved in the results of different color intensity on dyed cloths.

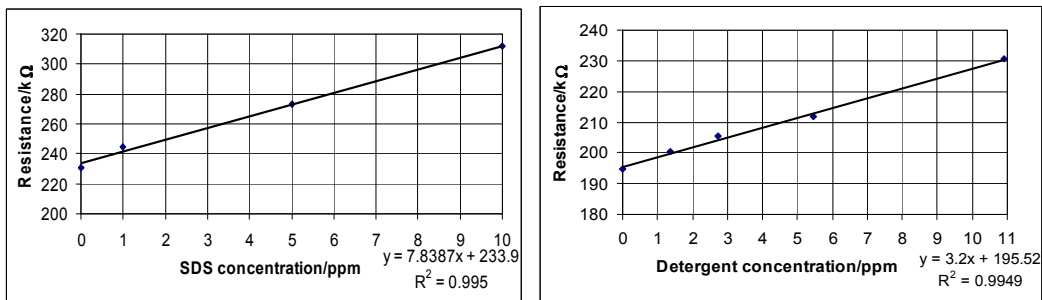


Figure 1 Color intensity of cashimilon acrylic cloth dyed in 0.005%w/v methyl violet dye within 15 mn (a) in the present SDS and (b) in the present of the commercial detergent (KAO brand).

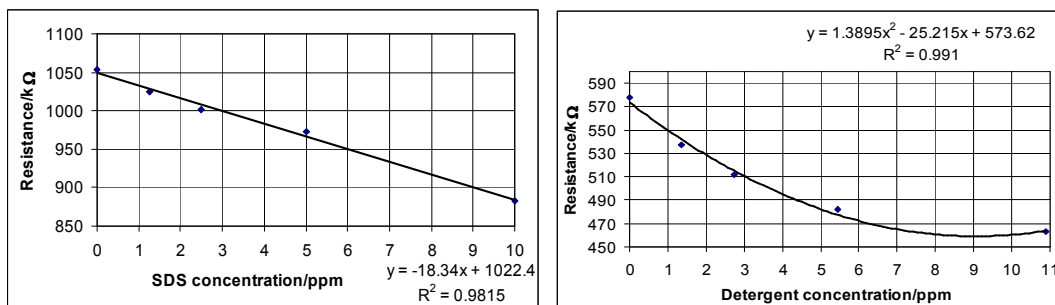


Figure 2 The color intensity of cashimilon acrylic cloth dyed in 0.02%w/v brilliant blue dye within 5 mn (c) in the present SDS and (d) in the present of the commercial detergent (KAO brand).

By founding this simple method, it is suggested that it could be used to analyze detergent in the solution. And it also should be used appropriately as a teaching material for a class activity of science for high school students.