CDI020190786

學與教策略系列：運用資訊科技工具以進行科學探究學習活動

Simple Colorimeter constructed by Micro:bit and Smartphone (ChemEye App)
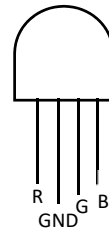
I.   Components of Device
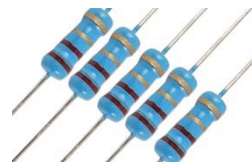

Micro:bit

Solderless Breadboard

RGB-LED light

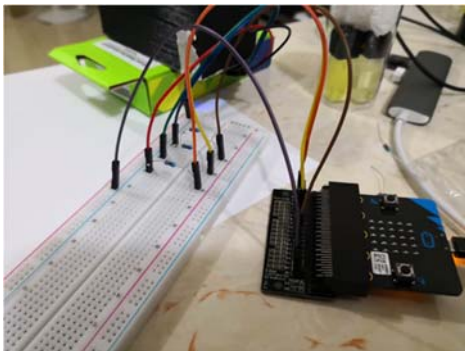Electric Wire

Extension Board


3D-Printing Box

Resistors (220-Ohm)

Set-up:

RGB-LED Light	Color of Wire used to connect	Circuit of Solderless Breadboard	Pin of Extension board Chosen to connect
R	Red		Pin0
GND	Brown		/
G	Green		Pin1
B	Blue		Pin2

II. Prepare the following concentrations of Standard Solution (Tartrazine 檸檬黃).
0ppm(Blank), 20ppm, 40ppm, 60ppm, 80ppm, 100ppm

III. Download ChemEye App from Apple Store(IOS) or Google Play(Android)

IV. Select the most suitable RGB value for Tartrazine.
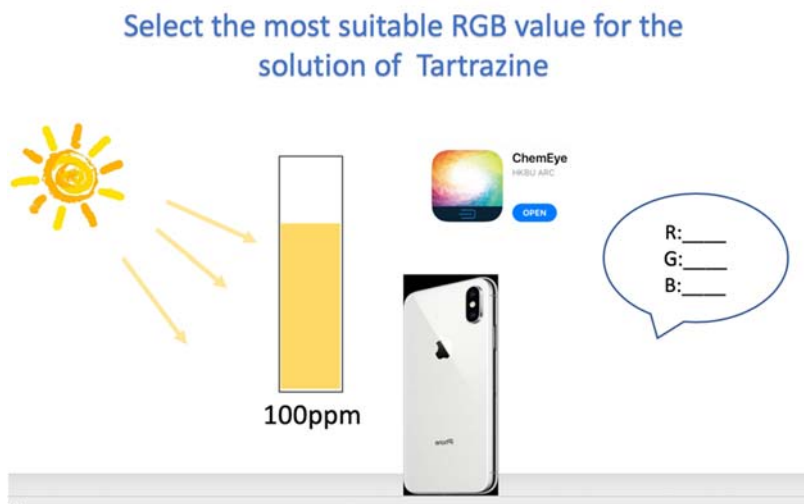
V. Coding (https://www.microbit.org/code/)

VI. Different concentrations of standard solution are transferred into the cuvette and are measured by ChemEye App. The readings can be collected.

	Blank	20ppm	40ppm	60ppm	80ppm	100ppm	Unknown
R							
G							
B							

Choose the data of _____ (R / G / B) value for plotting calibration curve.

Transmittance: $T = \dfrac{P_n}{P_0}$ Absorbance: $A = -\log T$

	Blank	20ppm	40ppm	60ppm	80ppm	100ppm	Unknown
Transmittance							
Absorbance							

Using the given graph paper to plot the calibration curve and to **Find out the concentration of Unknown solution.**

VII. The concentration of unknow solution = _____.