Material Study with Carmen Sylva Spectometric Device - CSSD

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We decided to develop a system which allows us to perform spectrometric analyzes of food, in order to offer people a simple method of quality control. To achieve our goal we used the Adafruit AS7262 6-channel Visible Light Sensor and the AS7263 Infrared (NIR) Spectral Sensor Breakout. We conducted series of tests and came to the conclusion that the conditions of the tests should be light conditions kept at a minimum and the distance between the sensors and the probe should be of 1cm. We have done spectrometric measurements on chocolates of different concentrations and color measurements. We have designed three versions of the device. The first version consists of an Arduino Nano microcontroller, the Sparkfun NIR sensor, an electromagnetical relay that switches between two sensors, a buzzer and a Bluetooth module. The second version consists of the Adafruit AS7262 sensor, Arduino Nano microcontroller, an LCD screen for live graphs and the Sparkfun OpenLog to save the data we acquire on an SD card. The third version has a RaspberryPi microcontroller and we used Node-RED to have graphs on an interactive web interface. The conclusion is that we designed and built a portable spectrometer device that is inexpensive, easy to use and communicates through Bluetooth with smart phones. We also have live graphs on an accessible web interface.

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