32. Monitoring of the rate of photosynthesis using data logger

A set of data logger consists of a data logging interface and sensors. There is a range of sensors which convert physical parameters, e.g. temperature, pressure, humidity into digital signals. Data logging interfaces convert, process and transfer the signals to the computer. Some data logging interfaces can also store data temporarily. Most data loggers are supplied with computer software which can display the collected data graphically on a computer screen and process the data for further analysis.

Procedure

1. Fill a flask with water and place some water plants inside it.
2. Calibrate the oxygen sensor according to the user's manual.
3. Place the dissolved oxygen sensor and the temperature sensor into the flask.
4. Use a light sensor to detect the change in light intensity.
5. Start the data logger to detect the changes in temperature, light intensity and dissolved oxygen content for a period of time (Fig.1).

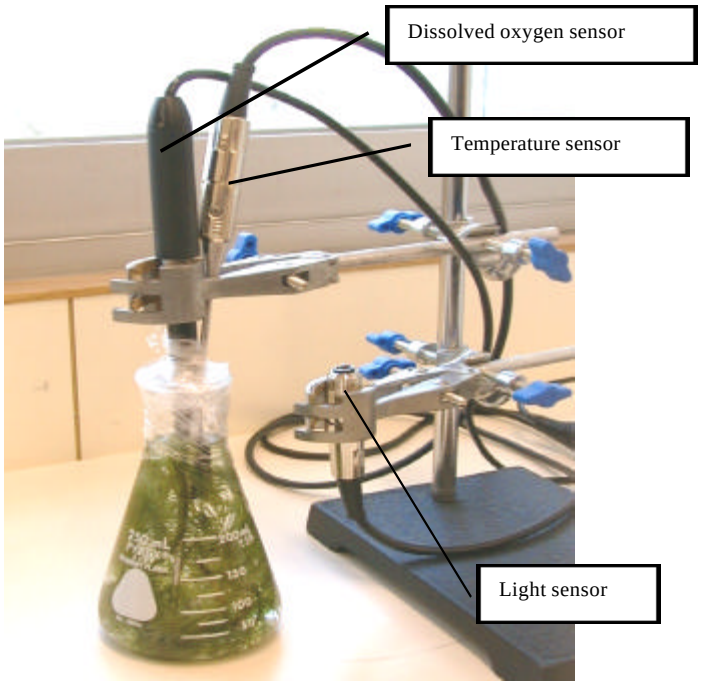

Fig.1 Experimental set up

6. After sufficient amount of data is collected, stop the data logger. Use the computer software to plot the data in a suitable form (Fig.2).

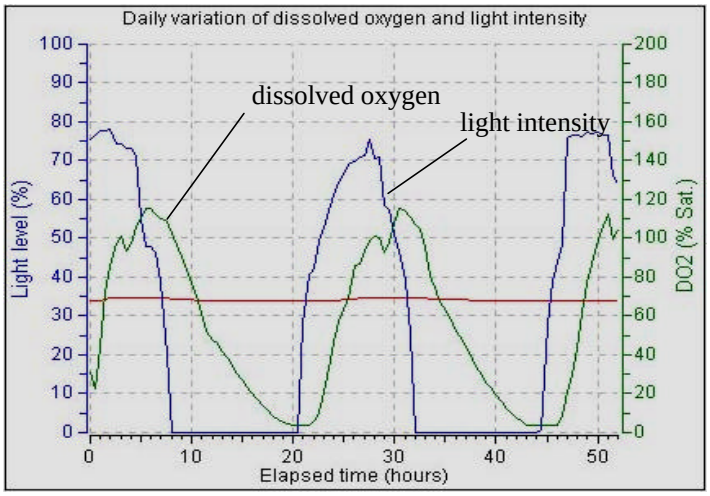

Fig.2 A graph showing the variation of dissolved oxygen and light intensity over 52 hours

Note

1. Make sure the oxygen sensor is calibrated before any measurement.
2. Select a suitable time interval for data sampling. Taking data too frequently would exceed the time range that can be recorded by the data logger, causing the data logger to stop collecting data prematurely.