

PHOTOSYNTHESIS IN WATER

INTRODUCTION

The application *Photosynthesis* can carry out an experiment demonstrating the consumption of carbon dioxide (CO_2) and the release of oxygen (O_2) by a plant in the presence of light.

In the dark the reverse reaction occurs, the plant breathes by releasing CO_2 and taking in O_2 .

This manipulation can be carried out in air (using O_2 and CO_2 sensors) or water (O_2 sensor only).

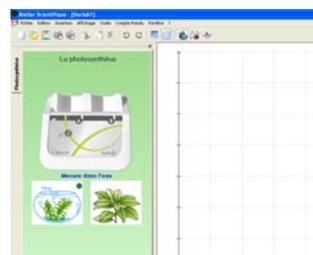
MATERIALS

Description	Quantity	Reference
Tooxy console	1	480000
O_2 sensor	1	482106
O_2 probe	1	453052
Animal respiration chamber	1	453066
Halogen lamp	1	554012
Magnetic stirrer	1	701098



EXPERIMENTATION

- Connect your Tooxy to your computer
- Select 'Biology' in the top right corner
- Chose 'dedicated workshops'
- Chose 'photosynthesis'

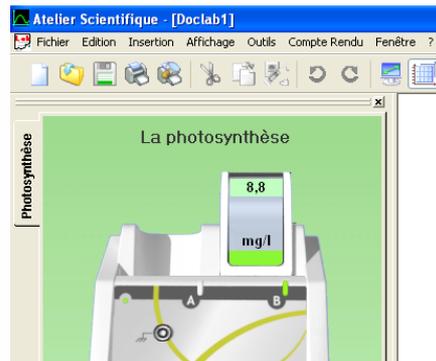


Tooxly

Select the aquarium



- **Connect the O₂ sensor:** it appears on the screen



- **Sensor set-up**

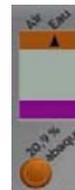
Oxymeter sensor and O₂ probe

O₂ probe: see instruction sheet

Oxymeter sensor :

Make sure that the cursor points to 'Water' thanks to the orange button.

O₂ concentration in water varies with temperature. Refer to the manual to get the desired value. (For a temperature of 18 °C, the concentration of O₂ is 9.5 mg/L).



To set O₂ concentration press the small brown button until the cursor above 20.9 % is blinking then turn the big brown button until you get the desired value and press briefly on the small button.

See instruction sheet for further information



Tooxly

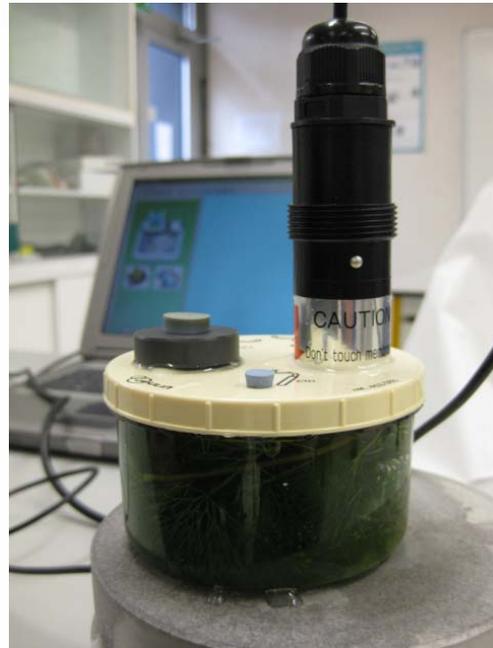
- **Experience Setting**

Fill up with an aquatic plant and water in (here a cabomba) the respiration chamber, add a turbulent and screw the cap.

Put the chamber on a magnetic stirrer.

Insert O₂ probe in the appropriate hole and plug the others.

Let acclimate the probe a few minutes

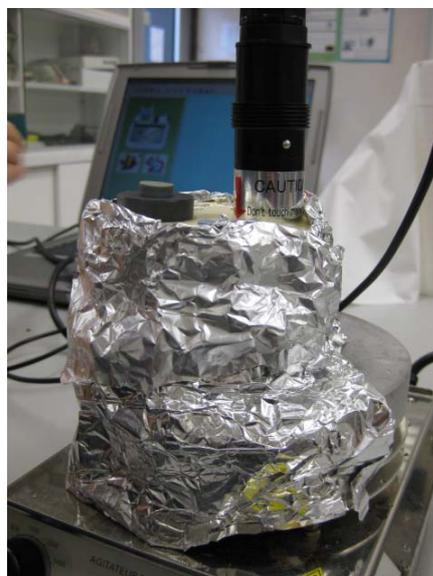


- **Acquisition parameters**

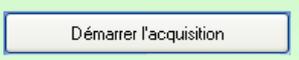
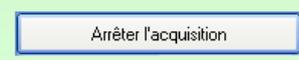
Everything is pre-configured in the application *photosynthesis*

- **Data acquisition**

Before starting the acquisition wrap the chamber with aluminium paper to simulate night.



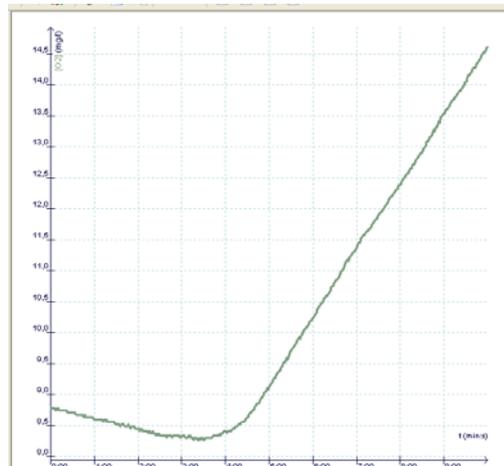


Click on  to start the acquisition and on  to stop it.

Remove aluminium paper after a few minutes.



CONCLUSION



We observe a slight decrease in the amount of O₂ in the dark (the plant breathes) and a significant increase in the amount of O₂ in the presence of light.