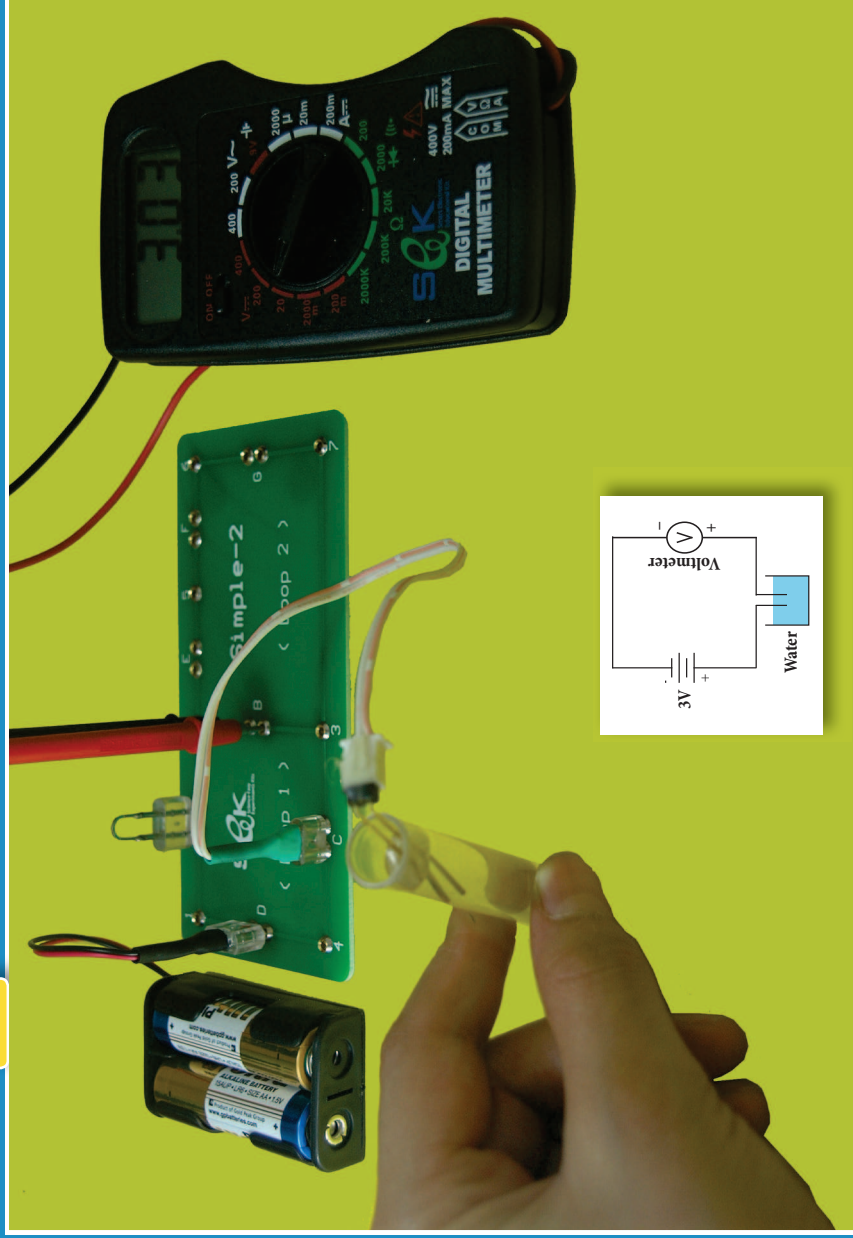


Experiment 10 The Electrical Conductivity of Water and Solutions



Objectives

1. The student will investigate the electrical conductivity of water.
2. The student will investigate how water conductivity is dependent on its concentration of dissolved salts.
3. The student will investigate electrical conductivity of different solutions.

Apparatus

- Experiments Board (Simple-2)
- DMM
- Sugar
- 2xAA Battery Holder w/AA batteries
- Jumpers
- Table salt
- Water Sensor
- LED
- Test tube

Procedure & Conclusions

1. Build a simple circuit as shown in the photo, in a way that the positive terminal (red wire) of the battery will be towards point (4)
2. Set the multimeter to “20V” in the DC (direct current) range, insert the DMM probes at the pair (B).
3. Insert jumpers at the pairs (A) & (C), watch the DMM reading.

- The voltage you measured is volt.
4. Insert the water sensor at the pair (C) instead of the jumper.
 5. Fill the test tube with tap water, immerse the probes of the water sensor deep enough in the water, watch the change in the DMM reading.
 - The voltage you measured in this step is volt.
 - In the above step, the current flows through ... air / water ... at the pair (C).
 - DMM reading indicates that tap water ... conducts / doesn't conduct ... electricity.
 6. Insert a LED at the pair (B) instead of the jumper in a way that the positive terminal of the LED will be towards point (3).
 7. Again immerse the probes of the water sensor deep enough in the water.
 - By immersing the probes of the conductivity sensor in the water the LED ... emits / doesn't emit ... light.
 8. Dissolve some table salt in the water and watch the LED.
 9. Add more salt and dissolve it in the water, see the changes on the LED.
 - By dissolving salt in the water, the light emitted from the LED ... increases / decreases ..., which means that the current flows in the circuit ... increases / decreases ..., this indicates that the dissolved salt ... increases / decreases ... the water electrical conductivity.

10. Fill the test tube with fresh tap water, immerse the probes of the water sensor deep enough in the water. watch the light emitted from the LED.
11. Dissolve some sugar in the water, watch if the light emitted from the LED increases.
 - By dissolving sugar in the water, the light emitted from the LED ... increases / decreases ..., this indicates that the dissolved sugar ... increases / decreases ... the water electrical conductivity.
12. Fill the test tube with distilled water, immerse the probes of the water sensor deep enough in the water. watch if the light emitted from the LED.
 - The conductivity of distilled water is ... less / more ... than the conductivity of tap water.

Discussion

1. Which conducts electricity more, tap water or distilled water? Why?
2. What do you think happen when the salt dissolved in the water?
3. Do you think that we can test the water purity by measuring the conductivity of water?