**Student worksheet: Rubber band**

**Introduction**

This experiment involves an investigation into the effect of heat on a stretched rubber band.

**What to record**

What was done and what was observed.

**What to do**

1. Take the rubber band. Quickly stretch it and press it against your lips. Note any temperature change compared with the unstretched band.
2. Now carry out the reverse process. First stretch the rubber band and hold it in this position for a few seconds. Then quickly release the tension and press the rubber band against your lips. Compare this temperature change with the first situation.
3. Set up the apparatus as shown in the diagram. Make sure that if the rubber band breaks the weight cannot drop on toes!
4. Predict what happens if this rubber band is heated with a hair dryer. Write down your prediction. Measure the length of the stretched rubber band.
5. Now heat the rubber band using the hair dryer and observe the result. Does this observation match your prediction? Measure the new length.

**Questions**

1. Based on your initial testing (by placing the rubber band against your lips) decide which process is exothermic (heat given out): stretching or contracting of the rubber band?
2. The chemist Le Chatelier made the statement ‘... an increase in temperature tends to favour the endothermic process’. Explain in your own words how this statement and how your answer to question 1 can account for your observations when heating the rubber band.

3. Draw a number of lines to represent chains of rubber molecules showing how they might be arranged in the unstretched and stretched forms. (Hint: the lines of polymer should show less order in the unstretched form than in the stretched form.)

Credits

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