

**Simple gravimetric chemical analysis –
weighing molecules the microscale way**

Construction of a spirit burner – a step-by-step guide

This is based on a guide produced by CLEAPSS (G157 08/2021).

Safety

Wear eye protection when breaking glass tubing

Materials

- Jam jar, 30 ml (these are often found in hotels and cafes, or can be bought from commercial suppliers online)
- 6 mm outer-diameter medium-wall borosilicate glass tubing
- Nails about 6 mm and 1.5 mm in diameter
- Hammer
- Cotton-string wick
- Glue to hold tubing in place, such as a hot glue gun
- Glass-tubing cutter (a three-cornered file can be used instead)
- Thick cloth
- Blu Tack
- Bunsen burner
- Tripod gauze
- Bench mat

Procedure

To prepare 50 mm glass tubing:

- 1) Place a length of tubing on a bench mat.

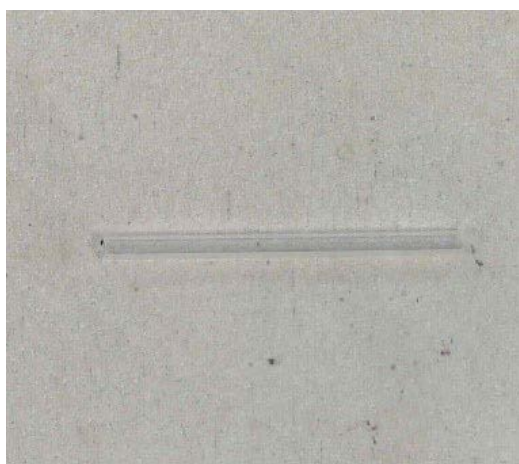


Image courtesy of the author

- 2) Hold the tubing in place and use the glass-tubing cutter to score the tubing where the cut is needed using the wheel (grinding should be heard and a mark will be seen).



Image courtesy of the author

- 3) Wet the mark with some water and turn the tubing so the mark is pointing away from your body.

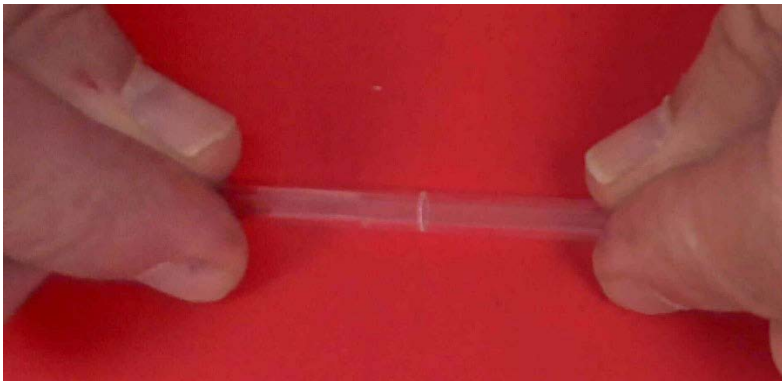


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- 4) Pull the tubing apart at the same time as exerting pressure behind the mark with the thumbs (the tubing can be held with a thick cloth to protect the hands; it should break easily, do not attempt to force it).



Image courtesy of the author

- 5) Remove any jagged edges by rubbing the end of the tubing with tripod gauze.

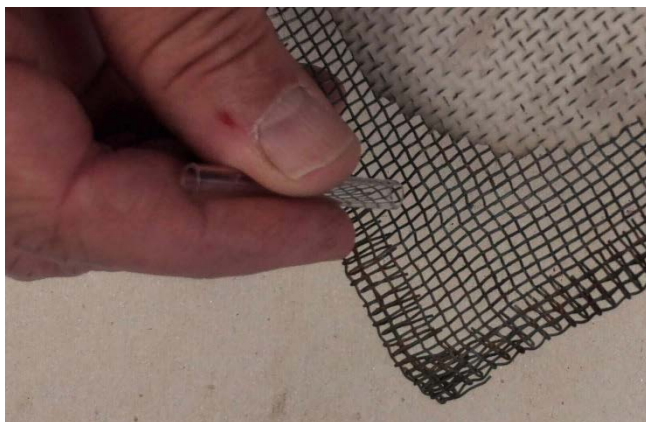


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- 6) Place one end of the tubing in a roaring Bunsen flame just above the blue cone, rotate, and keep it there until it just melts (flame polishing).

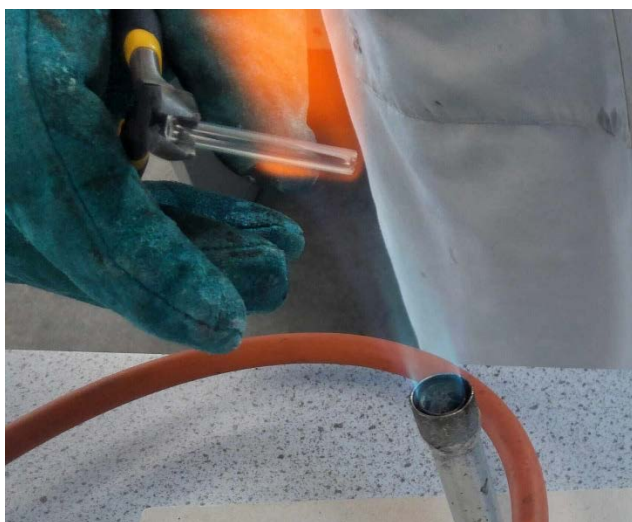


Image courtesy of the author

- 7) Allow the hot end to cool before flame polishing the other end.

To assemble the spirit burner:

- 1) Nail a hole in the centre of the lid, large enough for the tubing to just fit through.



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- 2) Nail a smaller hole (just under 2 mm) near one edge of the lid.



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- 3) Insert the glass tubing into the larger hole and hold in place under the lid using Blu Tack. Glue in place above the lid (using a hot glue gun works well), then remove the Blu Tack when set.



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- 4) Insert a string wick and pour a small amount of alcohol into the jar.



Image courtesy of the author

- 5) Put the lid back on and light the burner.



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