

EXPERIMENT

AIM

To draw out a glass jet.

MATERIAL REQUIRED

Glass tubing, Bunsen Burner.

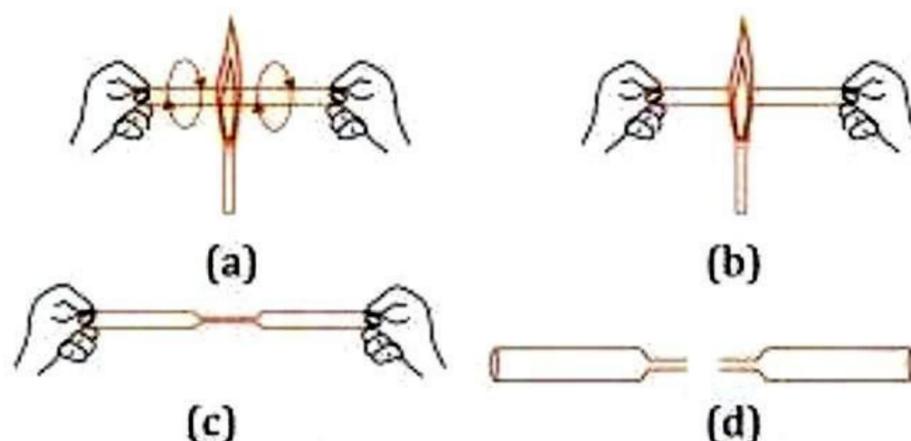


Fig. 1 Drawing a jet.

PROCEDURE

- (i) Take a delivery tube of the required length and diameter. Hold it with both hands and place it lengthwise in flame (Fig. 1).
- (ii) Keep rotating the tube to ensure uniform heating and continue heating till it softens.
- (iii) Take the tubing out of the flame and gently pull the two ends apart. The middle portion is drawn out to a thickness of about 2 mm.
- (iv) Cool and cut the narrow portion with a triangular file and two jets will be obtained.
- (v) Finally, round the ends of the jets by heating them in a flame for a short while.

PRECAUTIONS

While drawing a jet, pull apart the two ends of the red-hot tube slowly so that it becomes thin uniformly.

VIVA VOCE

Q 1. What is the purpose of drawing out a glass jet in chemistry experiments?

Ans. Drawing out a glass jet allows for the creation of fine, narrow openings in glass tubing, which are useful for controlling the flow of gases or liquids in laboratory apparatus such as gas delivery tubes or capillary columns.

Q 2. How is a glass jet typically drawn out?

Ans. The process involves heating a portion of the glass tubing until it softens and becomes malleable, and then gently pulling the softened glass to create a thin, tapered end or "jet."

Q 3. What type of glass is commonly used for drawing out glass jets?

- Ans.** Borosilicate glass, such as Pyrex, is commonly used for drawing out glass jets due to its high resistance to heat and chemical corrosion.
- Q 4. Why is it important to heat the glass evenly during the drawing-out process?**
- Ans.** Heating the glass evenly ensures uniform softening of the glass, which helps prevent the formation of weak spots or stress points that could lead to breakage during drawing.
- Q 5. What safety precautions should be taken when drawing out glass jets?**
- Ans.** Safety precautions include wearing heat-resistant gloves and protective eyewear, working in a well-ventilated area to avoid inhalation of fumes, and using proper heating equipment to minimize the risk of burns or accidents.
- Q 6. Can glass jets be drawn out to different lengths and diameters?**
- Ans.** Yes, glass jets can be drawn out to different lengths and diameters depending on the desired application. The length and diameter of the jet can be controlled by adjusting the heating temperature and the amount of pulling force applied.
- Q 7. How can the quality of a glass jet be assessed after drawing out?**
- Ans.** The quality of a glass jet can be assessed by inspecting it for any cracks, irregularities, or deformities that may affect its functionality. Additionally, the diameter of the jet can be measured using calipers or other measuring tools.
- Q 8. What are some common applications of glass jets in chemistry experiments?**
- Ans.** Glass jets are commonly used in gas chromatography, flame tests, gas delivery systems, and microscale reactions where precise control of flow rates is required.
- Q 9. Are there alternative methods for creating fine openings in glass tubing besides drawing out?**
- Ans.** Yes, alternative methods include drilling holes using specialized glass drills, or using laser or chemical etching techniques to create precise openings. However, drawing out is a common and versatile method for creating glass jets.
- Q 10. Can glass jets be reused or modified after they are drawn out?**
- Ans.** Yes, glass jets can often be reused or modified by reheating and reshaping them as needed. However, care should be taken to avoid introducing stress or weak points that could compromise their integrity.