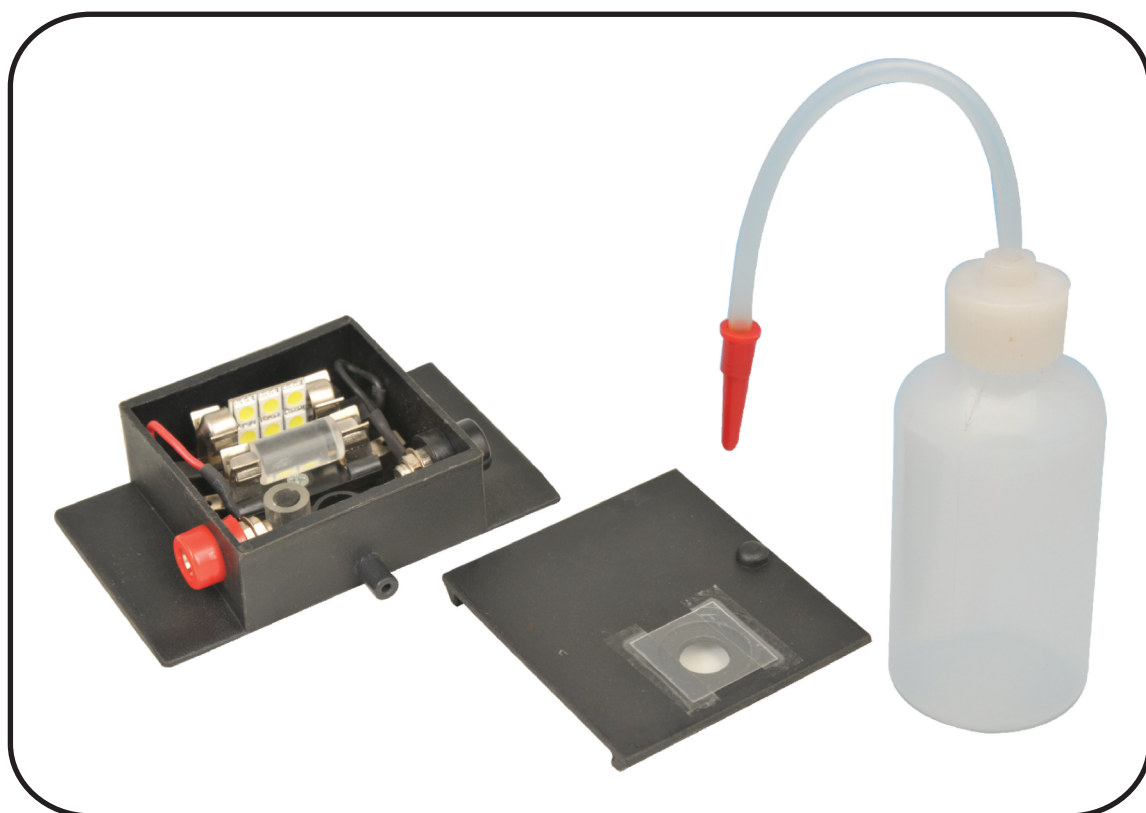


WHITLEY BAY SMOKE CELL NFU 592



version 18022015.1

Whitley Bay Smoke Cell :

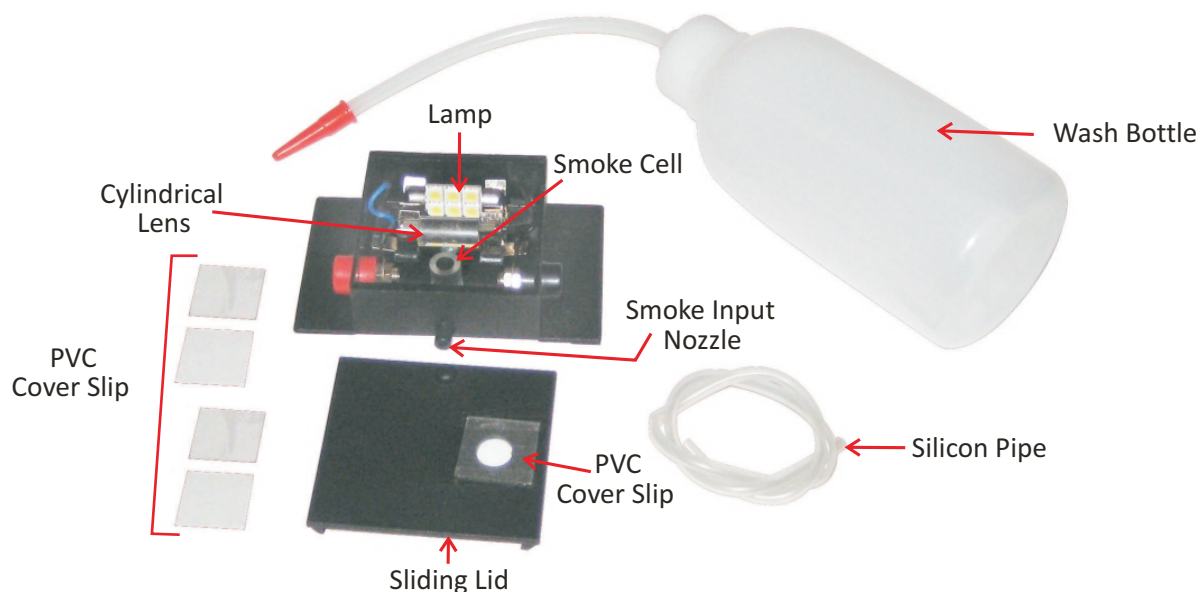
This apparatus contains and illuminates smoke particles for viewing under a microscope, so that Brownian motion can be observed.

Apparatus Details :

The apparatus consists of a black moulded plastic box with a sliding lid. The bottom of the box is extended at either end to form two flangs which will fit under standard microscope stage clips.

The box contains a smoke cell in the form of a short vertical clear plastic tube, a cylindrical Perspex condensing lens and a 12V DC lamp. Connection to the lamp is via 4mm sockets either side of the box, which are coloured according to polarity. The optical components are pre-set to focus the light into the cell at the correct height and no adjustment is necessary other than the focusing of microscope into the cell. The sliding clip has a small aperture glazed with a rectangular PVC cover slip which covers the smoke cell.

The apparatus is supplied complete with a simple but effective smoke generator which consists of a polythene squeeze bottle, with delivery tube and jet, containing a short length of string or cord clipped to the tube inside the bottle.



Requirements :

- Smoke generator
- Microscope
- D.C. Power Supply or battery
- 4mm connecting leads

The smoke generator is a polythene wash bottle, in which a smouldering match or length of string is placed to produce smoke.

The microscope should have at least 30mm clearance between the stage and bottom of the 10x objective.

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Experimental Procedure :

1. Mount the box on the stage of the microscope, connect the 12V DC power supply, and focus the on the window so that the cell can be viewed. Dust particles or scratches on the cover glass usually simplify this focusing.
2. **Active the smoke generator :**
 - a. If using string – light the end of a piece of string, and blow it out, so that the end of the string is smouldering. Place the smouldering end into the bottle, and drape the string over the rim of the bottle. Screw the lid on to secure the string. As the string smoulders, it will fill the bottle with smoke.
 - b. Using brown paper – roll some brown paper into a straw, light it, put it into the bottle, and replace the lid. The air will be consumed quickly and the flame will go out, producing a lot of smoke in the bottle.
3. Insert the end of the delivery tube into the bottom of the cell, the outer passage hole, input nozzle and introduce a single gentle whisp of smoke. The nozzle should be removed before relaxing the grip on the bottle, otherwise the smoke will be withdrawn.
4. Quickly replace the clear plastic cover of the smoke cell.
5. While looking into the microscope, focus downwards a millimeter or two, until the smoke particles become visible as small bright spots or stars of light. Brownian motion of the particles will soon be apparent as irregular darting or wobbling movements which may be superimposed on an overall drifting motion. Note: the match or string in the bottle will self-extinguish through lack of air after a short time, so can be safely forgotten about. However, it should not be left smouldering when putting the equipment away.

It will be found that there is quite a range of microscope adjustment through which the particles are visible. At first the background may be quite light due to the presence of water vapour introduced with the smoke, but as this vapour clears, the background becomes quite dark, providing excellent contrast for the particles. The number of particles slowly diminishes but enough will remain for at least ten minutes.

Servicing :

If the intensity of illumination decreases you will need to clean the cell, using cotton wool soaked in methylated spirit. The cell is removable to aid the process.

A 16mm cover glass can be used to replace the clear cover for the cell if need be.

Disclaimer :

If the equipment is used in a way not specified by Philip Harris, then the protection provided may be impaired.

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Warranty, Repairs And Spare Parts :

The power supply is guaranteed for a period of one year from the date of delivery to the customer. This warranty does not apply to defects resulting from the action of a user such as misuse, improper wiring, any operations outside of its specification, improper maintenance or repair, or unauthorized modification.

Our liability is limited to repair or replacement of the product. Any failure during the warranty period should be referred to Customer Services.

In the event of a fault, apart from replacing the instrument fuse in the IEC socket, the power supply should be referred to the Philip Harris recommended repair agent.

Disposal of Waste Electrical and Electronic Equipment (WEEE)



Do not dispose of this product with household waste

- For the proper treatment , recovery and recycling please take this product to an appropriate collection point.
- If you are unsure where this is, contact your Local Authority.
- By disposing of this product correctly you will be providing positive help to the environment.

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