Diffusion of Hydrogen

Summary
Introduction of hydrogen gas into an inverted bell jar suspended over a porous cup forces colored water into a beaker.

Hazards
Hydrogen gas is extremely flammable.

Chemicals and Solutions
Lecture bottle of compressed hydrogen gas with pressure regulator

Materials
- Hydrogen diffusion apparatus (containing colored water)
- Bell jar
- 250 ml beaker
- Piece of 1/4 inch amber tubing
- Stands and clamps

Procedure
1. Attach a piece of rubber tubing to hydrogen regulator.
2. Position the beaker beneath the side arm of hydrogen apparatus to capture displaced liquid.
3. Fill the bell jar with hydrogen gas and then place the bell jar over the porous clay cylinder.

Hint: The bell jar can be suspended over the porous cup, and hydrogen gas introduced via amber tube.

Discussion
The hydrogen molecules effuse through the holes in the porous cylinder faster than the oxygen and nitrogen molecules inside effuse out, creating an excess pressure inside the flask. The excess pressure forces the water out through the side arm.
Source URL: https://chem.washington.edu/lecture-demos/diffusion-hydrogen