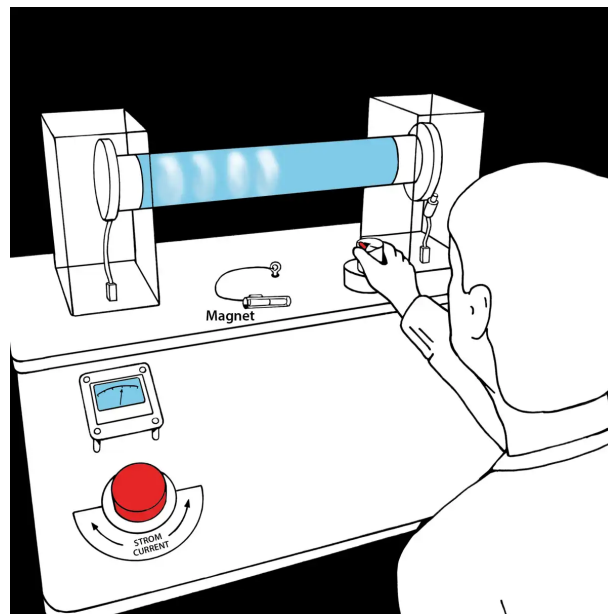


Glow Discharge Tube

How do neon signs glow?



Turn the CURRENT knob clockwise till the end.

Lift the AIR LEAK lever to let some air back into the tube.

Watch the tube. What happens?

Release the AIR LEAK lever to gradually pump air out of the tube again. What happens now?

Hold the magnet near the tube.

A high-voltage power source makes the left side of the tube positively charged and the right side negatively charged. Between both poles evolves a powerful electric field which pushes on loose electrons (negatively charged particles) to the positive end of the tube. The colorful light is created when these rapidly moving electrons hit the molecules in the air inside the tube. Such gas discharges are the reason why neon signs and fluorescent lamps glow. However, there must be neither too few nor too many molecules in the tube: If there are too few, the free electrons will not hit any molecules. If there are too many, the free electrons cannot accelerate sufficiently before they hit the next molecule.