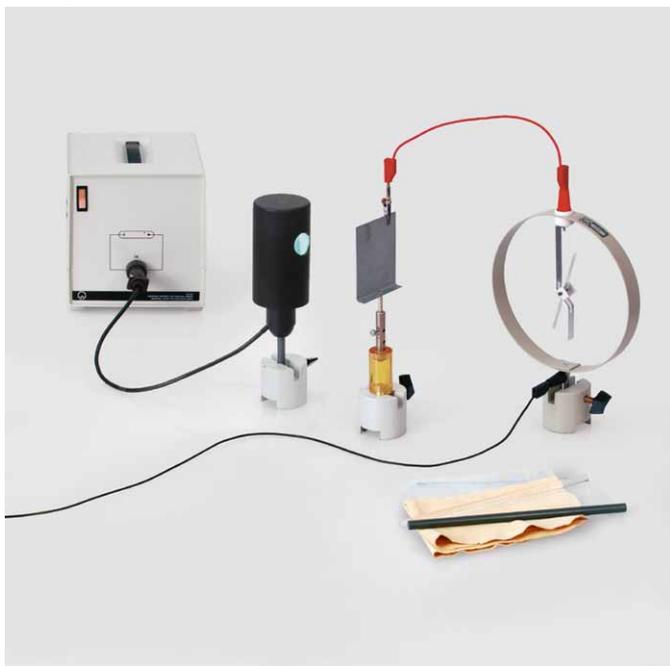


Phenomena of electrical conduction  
*Conduction phenomena in the vacuum*Photoemissive effect  
Electroscope**Object of the experiment**

1. Demonstrating the release of electrons from the surface of a zinc electrode irradiated with UV light

**Setup****Safety notes:**

UV radiation damages the retina:

Do not look directly into the ray path of the high-pressure mercury lamp.

During continued operation, the housing of the high-pressure mercury lamp is warmed up to temperatures over 100 °C. After switching the lamp on, only touch the socket of the lamp.

- Switch the high-pressure mercury lamp on, and wait for about 5 minutes.
- At first do not direct the radiation towards the experimental setup.
- Sandpaper the zinc plate before inserting it in the setup.

**Apparatus**

1 zinc electrode.....	546 31
1 high-pressure mercury lamp .....	451 15
1 lamp socket E 27, multi-pin connector .....	451 19
1 universal choke in housing.....	451 30
1 electroscope.....	540 091
1 pair of friction rods, PVC and acrylic .....	541 00
1 leather .....	541 21
1 polyethylene friction foils .....	200 70 750
1 cartridge burner DIN type.....	666 714
3 saddle bases.....	300 11
1 demonstration insulator.....	540 52
1 connecting lead, 25 cm, red.....	501 20
1 connecting lead, 100 cm, black.....	501 33
2 crocodile-clips .....	200 72 828
Additionally required:	
1 sand paper, fine	

**Carrying out the experiment**

Before the experiment is carried out, the result of experiment D 3.1.2.1.b (charge separation through friction) should be known.

- Rub the acrylic rod with the leather, and transfer the charges on the rod to the electroscope.
- If necessary, repeat this procedure until the deflection of the electroscope pointer is clearly seen.
- Direct the UV radiation towards the zinc electrode, and observe the deflection of the electrometer pointer.
- Rub the acrylic rod with a polyethylene friction foil, and repeat the experiment.

**Observation**

If the zinc electrode, which is connected to the electroscope, is negatively charged and irradiated with UV light, the deflection of the electrometer pointer decreases.

If the zinc electrode, which is connected to the electroscope, is positively charged and irradiated with UV light, the deflection of the electrometer pointer is retained.

**Evaluation**

When the zinc electrode is irradiated with UV light, electrons escape from the surface of the electrode.

This leads to the electrode being discharged, and a decrease of the deflection of the electroscope pointer is observed.

The release of electrons from the surface of metals irradiated with light is called photoemissive effect.