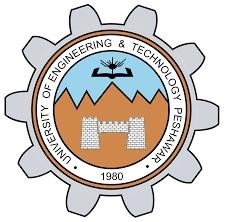
# To Study Variation of Photoelectric Effect Current with Intensity of Incident Light



**Submitted to**

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**Principal:**

When light is allowed to fall on the surface of metal it ejects the electron from the metal surface.

**Mathematical Form**

I=1/(d)2

Here I=intensity of light

d= distance between metal surface and light source

**Apparatus:**

1. Voltmeter.
2. Micrometer
3. Power Supply
4. Meter Rod
5. Photoelectric Effect.

**Procedure:**

1. when the current is allowed to pass through the closed circuit and also the bulb is kept on.
2. Then the beam of light is striking on the surface of metal due to which the electrons are ejected which depends upon the threshold frequency.
3. Also one of the terminal is concave in order to focus it on single point.
4. So when the electrons are ejected the electric field is applied and the electrons passes through micrometer.
5. Then the deflection will be show by micrometer/
6. When you are moving the bulb near to the surface of metal then more electron will be ejected and micrometer will show large deflection and vice versa.
7. Note the readings and find the intensity of light at different position

**CIRCUIT DIAGRAM:**

***Diagram

Description automatically generated***

**Readings:**

When Voltage is 100

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.NO | d | Q | d2 | I=1/d2 | V |
| 1 | 10 | 23 | 100 | 0.01 | 50 |
| 2 | 15 | 12 | 225 | 0.00444444 | 50 |
| 3 | 20 | 6 | 400 | 0.0025 | 50 |
| 4 | 25 | 5 | 625 | 0.0016 | 50 |
| 5 | 30 | 4 | 900 | 0.001111111 | 50 |
| 6 | 35 | 3 | 1225 | 0.00081633 | 50 |
| 7 | 40 | 2 | 1600 | 0.000625 | 50 |
| 8 | 50 | 1.5 | 2500 | 0.0004 |  |

When Voltage is 100

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.NO | d | Q | d2 | I=1/d2 | V |
| 1 | 30 | 6 | 900 | 1.11x10-3 | 100 |
| 2 | 40 | 6 | 1600 | 6.25x10-4 | 100 |
| 3 | 50 | 4 | 2500 | 4x10-4 | 100 |
| 4 | 55 | 3 | 3025 | 3.3x10-4 | 100 |
| 5 | 35 | 5 | 1225 | 8.16x10-4 | 100 |
| 6 | 45 | 3 | 2025 | 4.39x10-4 | 100 |
| 7 | 25 | 9 | 625 | 1.6x10-3 | 100 |
| 8 | 15 | 24 | 225 | 4.44x10-3 | 100 |

When Voltage is 150

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.NO | d | Q | d2 | I=1/d2 | V |
| 1 | 50 | 5 | 2500 | 0.0004 | 150 |
| 2 | 25 | 15 | 625 | 0.0016 | 150 |
| 3 | 35 | 9 | 1225 | 0.00081633 | 150 |
| 4 | 45 | 7 | 2025 | 0.00049383 | 150 |
| 5 | 20 | 25 | 400 | 0.0025 | 150 |
| 6 | 30 | 12 | 900 | 0.00111111 | 150 |
| 7 | 40 | 8 | 1600 | 0.000625 | 150 |
| 8 | 60 | 5 | 3600 | 0.00027778 | 150 |

when Voltage is 200

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.NO | d | Q | d2 | I=1/d2 | V |
| 1 | 45 | 2 | 4 | 0.25 | 200 |
| 2 | 55 | 3 | 9 | 0.11111111 | 200 |
| 3 | 30 | 1.5 | 2.25 | 0.44444444 | 200 |
| 4 | 35 | 0.5 | 0.25 | 4 | 200 |