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EFEK FOTOLISTRIK

$$E = n hf$$

jumlah data

$$E = hf = \frac{hc}{\lambda}$$

(energi total)

$$f = \frac{c}{\lambda}$$

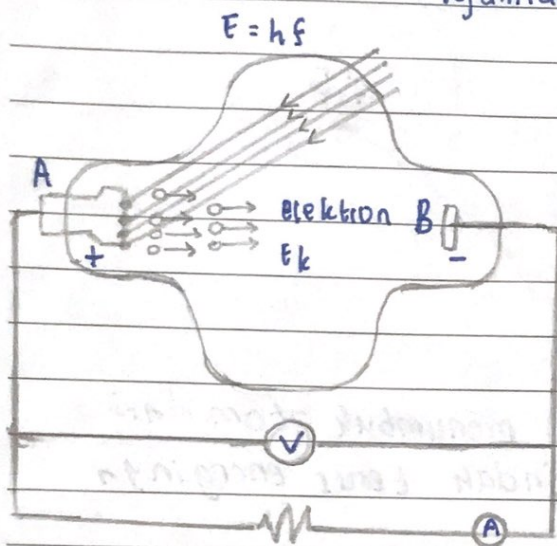
$$\lambda = \frac{c}{f}$$

$$\lambda = 7000 \text{ \AA} = 7 \times 10^{-7}$$

$$h = 6,63 \cdot 10^{-34} \text{ J} \cdot \text{dt}$$

$$c = 3 \cdot 10^8 \text{ m/s}$$

$$\lambda = \frac{c}{f} = \frac{3 \times 10^8}{7 \times 10^{-7}} = 4,29 \times 10^{-14}$$



- Intensitas cahaya hanya memperbanyak jumlah total elektron yang lepas, tidak berpengaruh terhadap E_k .
- f (Frekuensi Cahaya) dapat mempercepat gerak total elektron
- λ (Cahaya tampak) (380-700) nm
(3800-7000) \AA
- λ mungkin harus mungkin $> 700 \text{ nm}$ atau $< 380 \text{ nm}$

$$E = \frac{hc}{\lambda}$$

$$(6,626 \times 10^{-34}) (3 \times 10^8)$$

$$1 \times 10^{-6}$$

$$= 1,9878 \times 10^{-25}$$

$$1 \times 10^{-6}$$

$$= 1,9878 \times 10^{-19} \text{ J}$$

$$1 \text{ eV} = 1,6 \times 10^{-19} \text{ J}$$

$$E = \frac{1,9878 \times 10^{-19}}{1,6 \times 10^{-19}} = 1,24 \text{ eV}$$

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2) momentum foton

$$p = \frac{E}{c}$$

$$p = \frac{1,9878 \times 10^{-19}}{3 \times 10^8}$$

$$p = 6,63 \times 10^{-28} \text{ kg m/s}$$

3) $E = \frac{1}{2} m v^2$

$$m = 9,109 \times 10^{-31} \text{ kg (massa elektron)}$$

$$E = 1,9878 \times 10^{-19} \text{ J}$$

$$v = \sqrt{\frac{2E}{m}}$$

$$v = \sqrt{\frac{2 \times 1,9878 \times 10^{-19}}{9,109 \times 10^{-31}}}$$

$$= \sqrt{\frac{3,9756 \times 10^{-19}}{9,109 \times 10^{-31}}}$$

$$= \sqrt{4,363 \times 10^8}$$

$$= 6,61 \times 10^5 \text{ m/s}$$

$$= 660,642 \text{ m/s}$$

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Panjang gelombang cahaya

$$E = 3,3 \text{ eV}$$

$$h = 6,626 \times 10^{-34} \text{ J.s}$$

$$c = 3,0 \times 10^8 \text{ m/s}$$

$$1 \text{ eV} = 1,6 \times 10^{-19} \text{ J}$$

Jawab:

$$E = \frac{hc}{\lambda} = 3,3 \times (1,6 \times 10^{-19})$$

$$= 5,28 \times 10^{-19}$$

$$\lambda = \frac{hc}{E}$$

$$= \frac{6,626 \times 10^{-34} \cdot 3 \times 10^8}{5,28 \times 10^{-19}}$$

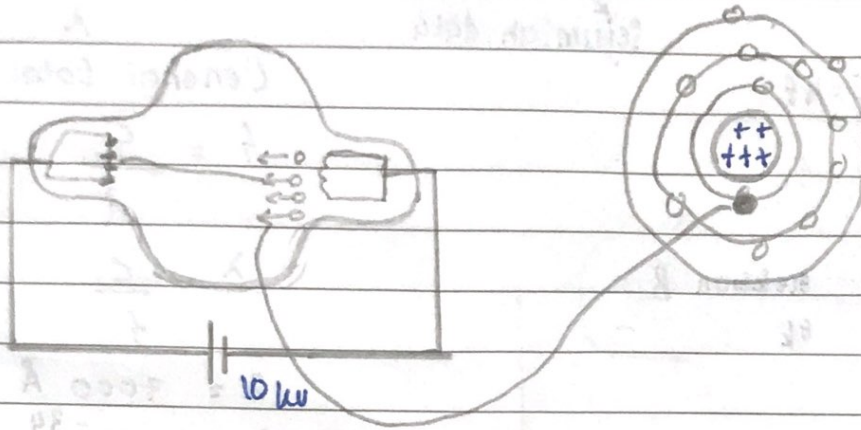
$$= \frac{1,9878 \times 10^{-25}}{5,28 \times 10^{-19}}$$

$$\lambda = 3,76 \times 10^{-7} \text{ m} = 376 \text{ nm}$$

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Sinar x



Elektron lepas akibat beda potensial menumbuk atom dari target sehingga terpental pindah terus energinya lebih tinggi (sinar x)

di inti energi kecil $\rightarrow$ sisa energinya (sinar x)