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Gelombang Partikel.

Efek fotolistrik

$w = hf_0$

$t = hf - w$
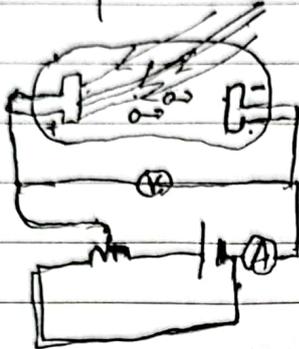
$= hf - hf_0 = h(f - f_0)$

$h = 6,63 \times 10^{-34}$ J. detik

$C = 3 \times 10^8$ m/s

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

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

$= h\left(\frac{c}{\lambda} - \frac{c}{\lambda_0}\right)$

$\lambda = 7000 \,\mathring{A} = 7 \times 10^{-7}$ m

$1\mathring{A} = 10^{-10}$ m

$\lambda = 1000 \, nm$.

1. Berkas sinar merah (sinar dengan intensitas kuat) dengan panjang gelombang 1000 nm. Berapa energi cahaya, berapa besar memantumr kecepatan elektron

$\lambda = 1000 \, nm = 1 \times 10^{-6}$ m $m = 9,1 \times 10^{-31}$ kg

$c = 3 \times 10^8$ m/s

$h = 6,63 \times 10^{-34}$

a. $E = hf$

$= h\frac{c}{\lambda} = 6,63 \times 10^{-34} \, Js \cdot \dfrac{3 \times 10^8 \, m/s}{1 \times 10^{-6} \, m}$

$= 6,63 \times 10^{-34} \, Js \cdot 3 \times 10^{14} /s$

$= 19,89 \times 10^{-20} \, J = 1,989 \times 10^{-19}$ J

b $P = \dfrac{h}{\lambda} = \dfrac{6,63 \times 10^{-34} \, Js}{10^{-6} \, m} = 6,63 \times 10^{-28}$ Js/m

Bio

6. $P = mv$

$$= \frac{m_0 v}{\sqrt{1 - \frac{v^2}{c^2}}} = \frac{m_0 v}{(1 - \frac{v^2}{c^2})^{\frac{1}{2}}}$$

$$P(1 - \frac{v^2}{c^2})^{\frac{1}{2}} = m_0 v$$

$$P^2(1 - \frac{v^2}{c^2}) = m_0^2 v^2$$

$$p^2$$

2. Cahaya matahari memancarkan cahaya sebesar 3,3 ev mengenai kulit anda apa yang terjadi pada kulit anda

$$E = 3,3 \, ev = 3,3 \times 1,6 \cdot 10^{-19} J$$

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

$$\frac{\cancel{E}}{\cancel{E}} = \frac{hc}{E} \quad \frac{6,63 \times 10^{-34} Js \times 3 \cdot 10^8 \, m/s}{3,3}$$

$$E = h\frac{c}{\lambda} \quad \Rightarrow \quad \lambda = \frac{hc}{E} = \frac{6,63 \times 10^{-34} Js \times 3 \cdot 10^8 \, m/s}{5,28 \times 10^{-19}}$$

$$= 3,767 \times 10^{-9} \, m$$

Sinar $x \rightarrow \lambda \, (1,3 - 4,8) \, 10^{-11} \, m$

$$(0,13 - 0,48) \, Å$$

$$E = 50.000 \, V$$

$$eV =$$