

# 作业纸

课程名称: 大物

班级: 6301216 教学班级: 0801224 姓名: 阿什顿 学号: 1120221303 第 1 页

$$2-2. \quad \nu_{\text{光}} = \frac{A_m}{h} = 5.53 \times 10^{14} \text{ Hz}$$

$$\lambda = \frac{c}{\nu_{\text{光}}} = 542 \text{ nm}$$

$$e\phi = \frac{1}{2} m_e v_m^2 = h\nu - A = 0.2 \text{ V}$$

$$v_m = 2.65 \times 10^5 \text{ m/s}$$

$$\lambda = \frac{p}{h\nu} = 5.03 \times 10^{18} \text{ m}^{-2}$$

$$2.4 \quad e\tilde{\epsilon} = e v_m \beta$$

$$\therefore v_m = 1.2 \text{ m/s}$$

$$\frac{hc}{\lambda} = \frac{hc}{\lambda_m} + \frac{1}{2} m_e v_m^2 \quad \lambda = 113 \text{ nm}$$

$$2-2.5 \quad \epsilon = \frac{hc}{\lambda} = 0.83 \text{ eV}$$

$$p = \frac{h}{\lambda} = 6.42 \times 10^{-28} \text{ kg} \cdot \text{m/s}$$

$$m = \frac{h}{c\lambda} = 1.47 \times 10^{-36} \text{ kg}$$

$$(2) \quad \epsilon = \frac{hc}{\lambda} = 2.48 \text{ eV}$$

$$p = \frac{h}{\lambda} = 1.31 \times 10^{-27} \text{ kg} \cdot \text{m/s}$$

$$m = \frac{h}{c\lambda} = 4.42 \times 10^{-36} \text{ kg}$$

$$b) \quad \epsilon = \frac{hc}{\lambda} = 62.2 \text{ eV}$$

$$p = 3.3 \times 10^{-24} \text{ kg} \cdot \text{m/s}$$

$$m = 1.11 \times 10^{-36} \text{ kg}$$

$$14) \quad \epsilon = 8.29 \times 10^3 \text{ eV}$$

$$p = 4.42 \times 10^{-24} \text{ kg} \cdot \text{m/s}$$

$$m = 1.47 \times 10^{-36} \text{ kg}$$

联系方式: 19883557844

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2-7.  $\Delta\lambda = \lambda - \lambda_0 = \lambda_c (1 - \cos\varphi)$

$$\lambda = \frac{h}{m_e c} (1 - \cos\varphi) + \lambda_0$$

$$\lambda_g = 0.0732 \text{ nm}$$

$$\bar{\epsilon}_g = h \frac{c}{\lambda_0} - h \frac{c}{\lambda} = \frac{h c \Delta\lambda}{\lambda \lambda_0} = 582 \text{ eV}$$

$$\lambda_H = 0.0756 \text{ nm}$$

$$\bar{\epsilon}_H = 1.15 \times 10^3 \text{ eV}$$

2-12.  $\epsilon = \frac{h c}{\lambda} = 256 \text{ eV}$

$$\epsilon_K = -13.6 + 12.19 \text{ eV} = -3.41 \text{ eV}$$

$$\bar{\epsilon}_H = 256 - 3.41 = 0.85 \text{ eV}$$

$$n = \sqrt{\frac{-13.6}{-0.85}} = 4$$

2-14. (1)  $\lambda = \frac{h}{p} = \lambda_c = \frac{h}{m_e c} = 2.43 \times 10^{-3} \text{ nm}$

$$\therefore p = 2.73 \times 10^{-22} \text{ kg m/s}$$

12)  $p = \frac{m_e v}{\sqrt{1 - \frac{v^2}{c^2}}}$   $\therefore c = \frac{v}{\sqrt{1 - \frac{v^2}{c^2}}} = \frac{\sqrt{2}}{2}$

2-16.  $p = \frac{h}{\lambda} = 3.32 \times 10^{-24} \text{ kg m/s}$

$$\bar{\epsilon}_e = \frac{p^2}{2m_e} = 37.8 \text{ eV}$$

$$\bar{\epsilon}_c = h\nu = 6.22 \text{ keV}$$

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2-20.  $\Delta x = 7.2 \times 10^{-5} \text{ m}$

$$\Delta v = \frac{h}{m \Delta x} = 8.8 \times 10^{-4} \text{ m/s}$$

2-21  $\Delta E \Delta t \geq \frac{h}{2}$

$$\Delta E = \Delta m c^2$$

$$\Delta m c^2 \Delta t \geq \frac{h}{2}$$

$$\Delta m \geq \frac{h}{2 \Delta t c^2} = 6.98 \times 10^{-36} \text{ kg}$$

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