

1. Mo k-series radiation has an absorption edge corresponding to a wavelength of 0.61977 Å. The $k\alpha_1$ line has a wavelength of 0.70926 Å and the $k\beta_1$, a wavelength of 0.63225 Å.

A. What is the minimum potential in KV that can be used to produce Mo k-series radiation from a Mo-target X-ray tube?

B. What is the frequency of Mo $k\beta$ radiation?

C. Nb has an absorption edge corresponding to a wavelength of 0.65291 Å. Can Nb be used as a β -filter for Mo radiation? Why?

Planck's Constant = 6.6×10^{-34} joule-sec

1 eV = 1.6016×10^{-19} joule

$c = 3.0 \times 10^8$ m/sec

2. Barite (BaSO_4) has orthorhombic cell edges $a = 7.157 \text{ \AA}$, $b = 8.884 \text{ \AA}$, and $c = 5.457 \text{ \AA}$. Calculate 2θ for $\text{CuK}\alpha$ radiation $\lambda = 1.5405 \text{ \AA}$ for the following X-ray diffractions:

a. (002)

b. (110)

c. (021)

d. (111)

e. (301)

