Answer on Question #71684, Chemistry / General Chemistry

X rays from a copper X-ray tube (λ = 154 pm) were diffracted at an angle of 14.20 degrees by a crystal. Assuming first-order diffraction (n = 1 in the Bragg equation), what is the interplanar spacing in this crystal?

Solution

Bragg's law says:

2dsinθ = nλ, where d is interplanar spacing

$d = \dfrac{n\lambda}{2sin\theta} = \dfrac{154}{2 \times 0,245}$ = **314 pm**

Answer

The interplanar spacing in this crystal is **314 pm**.