X-ray Diffraction: Determination of Crystal Structures

3.57   From the Table 3.1, aluminum has an FCC crystal structure and an atomic radius of 0.1431 nm. Using Equation 3.1, the lattice parameter a may be computed as

$$a = 2R\sqrt{2} = (2)(0.1431 \text{ nm})\sqrt{2} = 0.4048 \text{ nm}$$

Now, the interplanar spacing d_{110} maybe determined using Equation 3.14 as

$$d_{110} = \frac{a}{\sqrt{(1)^2 + (1)^2 + (0)^2}} = \frac{0.4048 \text{ nm}}{\sqrt{2}} = 0.2862 \text{ nm}$$