which leads to

$$c'_{Ni} = \frac{1.81 \text{ x } 10^{-6} \pm \sqrt{(1.81 \text{ x } 10^{-6})^2 - (4)(1.81 \text{ x } 10^{-6})(2.33 \text{ x } 10^{-7})}}{(2)(1.81 \text{ x } 10^{-6})}$$

And, taking the negative root,

$$c'_{Ni} = 0.152$$

Or, in terms of atom percent,

$$C'_{Ni} = 100c'_{Ni} = (100)(0.152) = 15.2 \text{ at\%}$$

While the concentration of copper is

$$C'_{Cu} = 100 - C'_{Ni} = 100 - 15.2 = 84.8 \text{ at\%}$$

Now, converting this composition to weight percent Ni, requires that we use Equation 4.7a as

$$C_{Ni} = \frac{C'_{Ni}A_{Ni}}{C'_{Ni}A_{Ni} + C'_{Cu}A_{Cu}} \text{ x } 100$$

$$= \frac{(15.2 \text{ at\%})(58.69 \text{ g/mol})}{(15.2 \text{ at\%})(58.69 \text{ g/mol}) + (84.8 \text{ at\%})(63.55 \text{ g/mol})} \text{ x } 100$$

$$= 14.2 \text{ wt\%}$$

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