4.13 This problem calls for a conversion of composition in atom percent to composition in weight percent. The composition in atom percent for Problem 4.11 is 44.8 at% Ag, 46.2 at% Au, and 9.0 at% Cu. Modification of Equation 4.7 to take into account a three-component alloy leads to the following

$$C_{Ag} = \frac{C'_{Ag} A_{Ag}}{C'_{Ag} A_{Ag} + C'_{Au} A_{Au} + C'_{Cu} A_{Cu}} \times 100$$

$$= \frac{(44.8)(107.87 \text{ g/mol})}{(44.8)(107.87 \text{ g/mol}) + (46.2)(196.97 \text{ g/mol}) + (9.0)(63.55 \text{ g/mol})} \times 100$$

$$= 33.3 \text{ wt\%}$$

$$C_{Au} = \frac{C'_{Au} A_{Au}}{C'_{Ag} A_{Ag} + C'_{Au} A_{Au} + C'_{Cu} A_{Cu}} \times 100$$

$$= \frac{(46.2)(196.97 \text{ g/mol})}{(44.8)(107.87 \text{ g/mol}) + (46.2)(196.97 \text{ g/mol}) + (9.0)(63.55 \text{ g/mol})} \times 100$$

$$= 62.7 \text{ wt\%}$$

$$C_{Cu} = \frac{C'_{Cu} A_{Cu}}{C'_{Ag} A_{Ag} + C'_{Au} A_{Au} + C'_{Cu} A_{Cu}} \times 100$$

$$= \frac{(9.0)(63.55 \text{ g/mol})}{(44.8)(107.87 \text{ g/mol}) + (46.2)(196.97 \text{ g/mol}) + (9.0)(63.55 \text{ g/mol})} \times 100$$

$$= 4.0 \text{ wt\%}$$