Answer on Question #49440 – Chemistry – Inorganic Chemistry

Question:

In refining of silver by electrolytic method what will be the weight of 100 gram silver anode if 5 ampere current is passed for 2 hours? Purity of silver is 95 % by weight.

Answer:

$$m = \left(\frac{It}{F}\right)\left(\frac{M}{z}\right)$$

where:

m is the mass of the substance liberated at an electrode in grams

I is the current passed through the substance

t is time of electrolysis

F = 96485 C mol−1 is the Faraday constant

M is the molar mass of the substance

z is the valency number of ions of the substance (electrons transferred per ion).

The total mass of silver which was refined by electrolytic method is:

$$m = \frac{5 * 2 * 3600 * 108}{96485 * 1 * 0.95} = 42.417\ g$$

The weight of silver anode after electrolysis will be:

$$m = 100 - 42.417 = 57.583\ g$$

Answer: **57.583 g**