

## Answer on Question #69457 - Chemistry - Physical Chemistry

**Question:** A current of 13A is passed through an aqueous solution of an element M for 30 minutes and 4g of the element is found to be deposited. Calculate the charge on the ions of the element M (R.A.M of element M is 50)

**Solution:**

Faraday's laws can be summarized by:

$$m = \frac{I \cdot t \cdot M}{z \cdot F}$$

where:

- $m$  is the mass of the substance liberated at an electrode in grams
- $I$  is the total electric charge passed through the substance in coulombs
- $t$  is time of electrolysis in seconds
- $M$  is the molar mass of the substance in grams per mol
- $F = 96485 \text{ C mol}^{-1}$  is the Faraday constant
- $z$  is the charge on the ions of the element

According to this formula:

$$z = \frac{I \cdot t \cdot M}{m \cdot F} = \frac{13 \cdot 1800 \cdot 50}{4 \cdot 96485} = 3$$

**Answer:** The charge on the ions of the element M is 3.

Answer provided by <https://www.AssignmentExpert.com>