

Question #79829, Chemistry / General Chemistry

Gold forms compounds in the +1 and +3 oxidation states. What is the oxidation number of gold in a compound deposits 1.53 grams of gold metal when electrolyte for 15 minutes with a 2.50 ampere current.

Answer:

Formula: $m = (E \times I \times t) / F$, therefore $E = (m \times F) / (I \times t)$

where E – chemical equivalence, I - current power, t – time electrolysis, F – number of faradays.

$E = A_r / \text{oxidation states}$, therefore $\text{oxidation states} = A_r / E$

$m = 1.53 \text{ g}$

$I = 2.5 \text{ A}$

$t = 15 \text{ min}$

$F = 1608.3 \text{ (for min)}$

$A_r = 197$

$E = (1.53 \times 1608.3) / (2.5 \times 15) = 65.61864$

$\text{oxidation states} = A_r / E$

$\text{oxidation states} = 197 / 65.61864 = 3$

Answer oxidation states = +3, Au^{+3}

Answer provided by AssignmentExpert.com