Answer on Question #48230 – Chemistry – Inorganic Chemistry

Question:

Molecular formula of an oxide of iron in which the mass percent of iron and oxygen are 69.9 and 30.1

Answer:

Mass percent of iron (Fe) = 69.9% (Given)

Mass percent of oxygen (O) = 30.1% (Given)

Number of moles of iron present in the oxide is

$$69.90/55.85 = 1.25$$

Number of moles of oxygen present in the oxide is

$$30.1/16.0 = 1.88$$

Ratio of iron to oxygen in the oxide is

$$1.25:1.88 = 1:1.5 = 2:3$$

The empirical formula of the oxide is Fe_2O_3.

Answer: **Fe_2O_3**