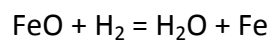


Answer on Question #78005 - Chemistry - Physical Chemistry

Question:

_____ is the proportion of hydrogen to oxygen by mass in water if 8.50g of iron 2oxide is heated in a current of dry hydrogen to give 6.58g of iron and 2.16g of water

Solution:



$$n(\text{FeO}) = m/M = 8.5/72 = 0.12 \text{ mol};$$

$$n(\text{FeO}) = n(\text{H}_2\text{O}) = n(\text{Fe}) = 0.12 \text{ mol};$$

$$w(\text{H}) = M(\text{H})/M(\text{H}_2\text{O}) = 2 / 18 = 0.111 = 11.1 \%;$$

$$w(\text{O}) = 0.889 = 88.9 \%;$$

$$m(\text{H}) \text{ in water} = 2.16 * 0.111 = 0.240 \text{ g};$$

$$m(\text{O}) \text{ in water} = 2.16 * 0.889 = 1.920 \text{ g};$$

$$m(\text{H}):m(\text{O}) = 0.240:1.920 = 1:8.$$