Odebral se 12,0-litrový vzorek vzduchu o teplotě 25 °C a tlaku 1,00 atm a vysušil se. Po vysušení byl objem vzorku přesně 11,50 l. Jaké bylo hmotnostní procento vody v původním vzorku vzduchu?

A 12.0-liter sample of air at 25°C and 1.00 atm pressure was collected and dried. After drying, the volume of the sample was exactly 11.50 L. What was the percentage by mass of water in the original air sample? Answer: Under the conditions given, a mole of dry air occupies: $22.4L \times (298 \text{ K}/273 \text{ K}) = 24.5 \text{ L/mol}$ mol dry air = 11.5L/(24.5 L/mol) = 0.469 molThe average molar mass of dry air is 29.1 g/mol The mass of dry air = $0.469 \text{ mol} \times 29.1 \text{ g/mol} = 13.6 \text{ g}$ mols of $H_2O = 0.5L/(24.5 L/mol) = 0.0204 mol$ mass of $H_2O = 0.0204 \text{ mol}$ ' \square 18.0 g/mol = 0.367 g % H_2O by mass = 100×0.367 g/(13.6 g + 0.367 g) = 2.62%