Answer on Question #43705 - Chemistry - Physical Chemistry

Question:

What is the concentration of the hydronium ion for a solution whose pOH is 4?

Answer:

pH is defined as the decimal logarithm of the reciprocal of the hydronium ion activity, H_3O^+, in a solution.

$$pH = - \log [H_3O^+]$$

then $[H_3O^+] = 10^{-pH}$

The relationship between pH and pOH is the next:

$$pH + pOH = 14$$

That's why $pH = 14 – pOH = 14 – 4 = 10;$

Then $[H_3O^+] = 10^{-pH} = 10^{-10}$

Answer: the concentration of the hydronium ion is 1×10^{-10} M.