Answer to Question #58553, Chemistry / Other

Propanoic acid is a weak acid used to inhibit mould formation in bread. A 0.10 mol/L solution of propanoic acid has a pH of 2.96. Calculate the Ka for the propanoic acid.

Solution:

$$K_a = \frac{[H^+][A^-]}{[HA]}$$

[H$^+$] = [A$^-$]

$$K_a = \frac{[H^+]^2}{[HA]} = \frac{(10^{-pH})^2}{c - 10^{-pH}} = \frac{0.0011^2}{0.1 - 0.0011} = 1.2 \times 10^{-5}$$

Answer:

1.2x10^{-5}