

Exercise 1 — Basics about acids and intermolecular forces

1. Phosphoric acid (H_3PO_4) is a weak acid. Its dissociation constants are $\text{pK}_{\text{a}1} = 2.15$, $\text{pK}_{\text{a}2} = 6.82$, $\text{pK}_{\text{a}3} = 12.38$. Draw a titration curve ("H⁺ ions dissociated per molecule" along the x-axis, pH along the y-axis) from 0 to 3 H⁺ ions dissociated.

2. In a solution at $\text{pH} = 7.2$, what would the **predominant** form of phosphoric acid be? What would be the next most common form?

3. What **intermolecular force or forces** hold(s) together molecules of palmitic acid $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$, a fatty acid?