

化学平衡 (BTBの場合)

<化学平衡>

右向き反応の速さ = 左向き反応の速さ
正反応 逆反応

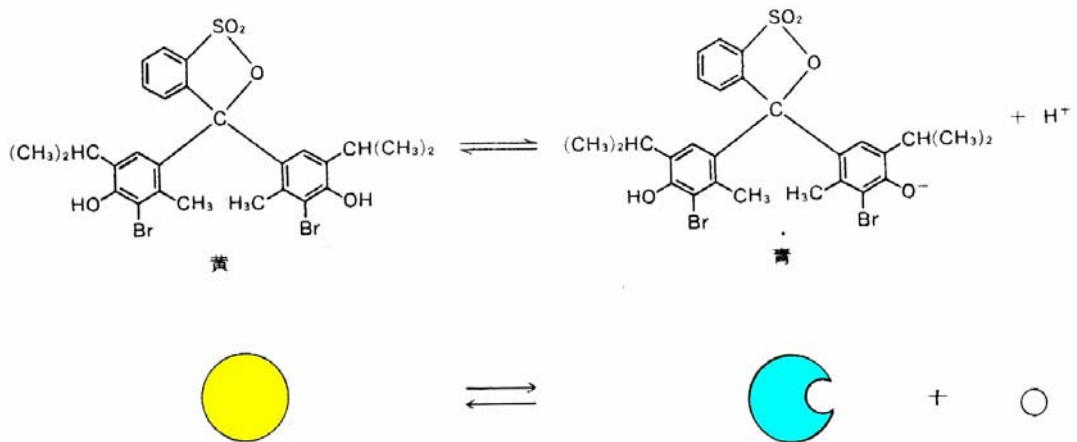
* 矢印の太さで
速さを表わす

A pH=6

B pH=7

C pH=8

プロモチモールブルーの変色



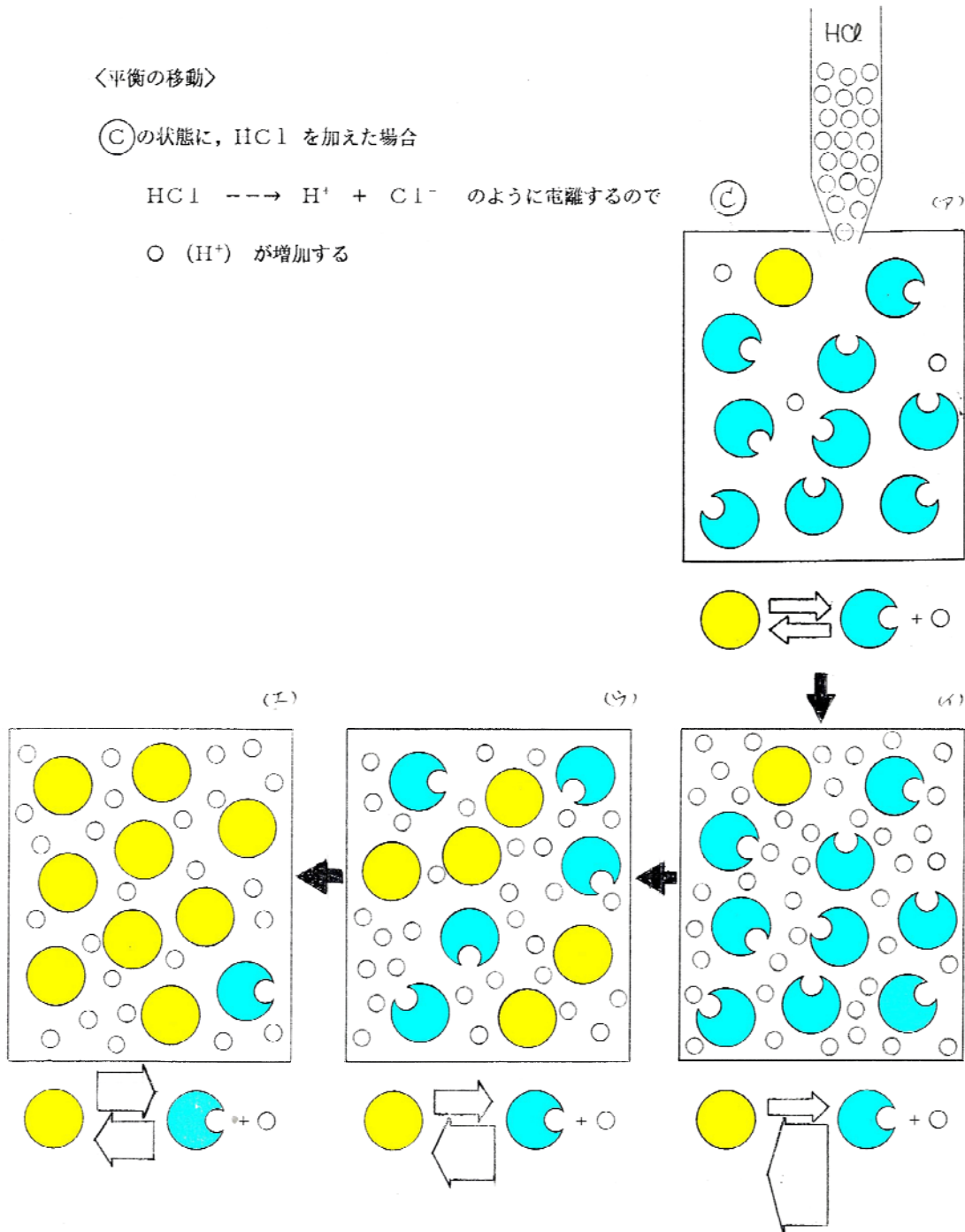
平衡の移動 (BTBの場合) その1

<平衡の移動>

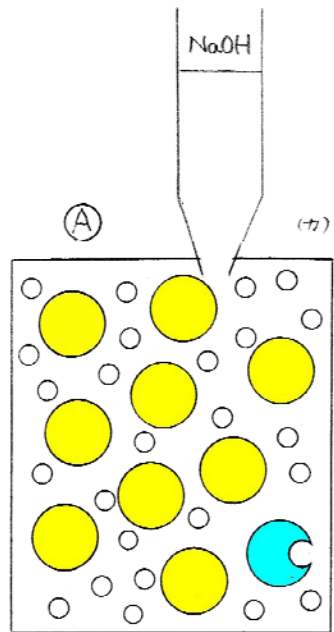
③の状態に、HCl を加えた場合

$\text{HCl} \rightleftharpoons \text{H}^+ + \text{Cl}^-$ のように電離するので

○ (H^+) が増加する

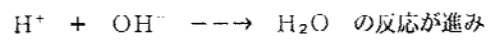
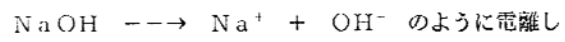


平衡の移動 (BTBの場合) その2

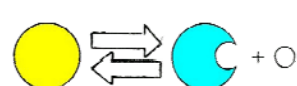
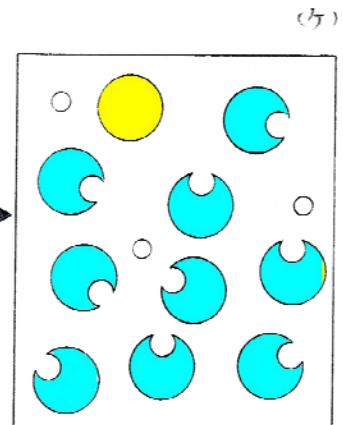
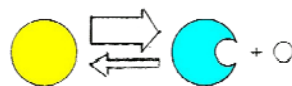
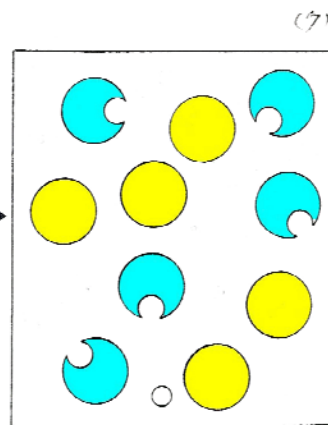
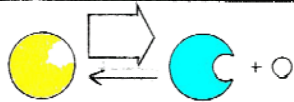
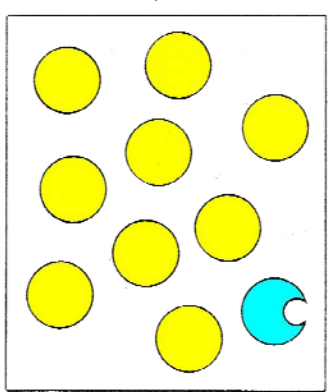
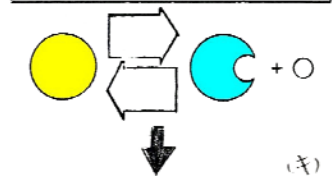


<平衡の移動>

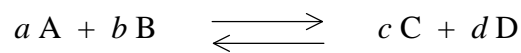
(A)の状態に, NaOH を加えた場合



○ (H⁺) が減少する



平衡定数



$$\frac{[C]^c [D]^d}{[A]^a [B]^b} = K \quad (\text{平衡定数})$$

[水]

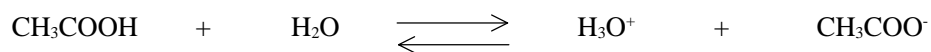
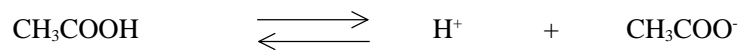


$$\frac{[H^+][OH^-]}{[H_2O]} = K$$

$$[H^+][OH^-] = K [H_2O] = K_w$$

$$[H^+][OH^-] = K_w = 1.0 \times 10^{-14} \quad (25^\circ C)$$

[酢酸]



$$\frac{[H^+][CH_3COO^-]}{[CH_3COOH]} = 1.75 \times 10^{-5}$$