

結晶化度

結晶化度の解析法

X線散乱

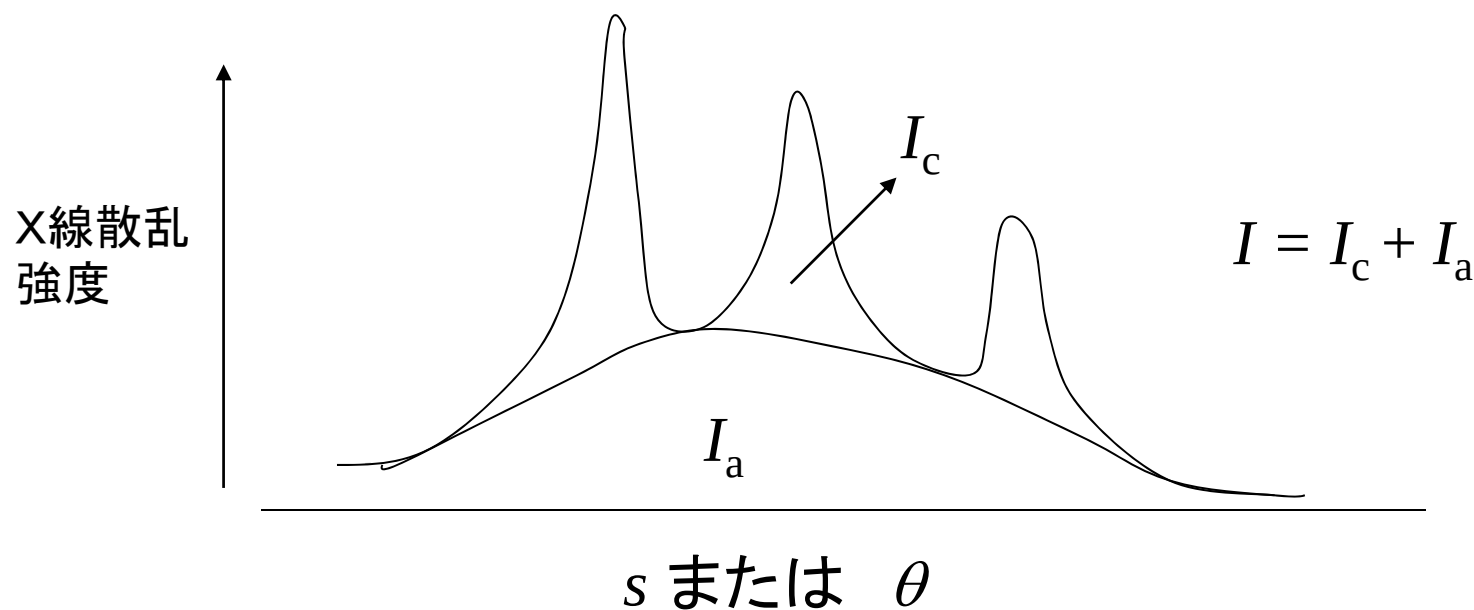
$$X_c = \frac{\int_0^\infty s^2 I_c(s) ds}{\int_0^\infty s^2 I(s) ds}$$

基本原理

(周期構造からの散乱強度／全散乱強度)

$$X_c = \frac{\int_{2\theta_1}^{2\theta_2} I_c(2\theta) d(2\theta)}{\int_{2\theta_1}^{2\theta_2} I(2\theta) d(2\theta)}$$

簡便法



その他の結晶化度測定法

密度法

$$X_c^v = \frac{\rho - \rho_a}{\rho_c - \rho_a}$$

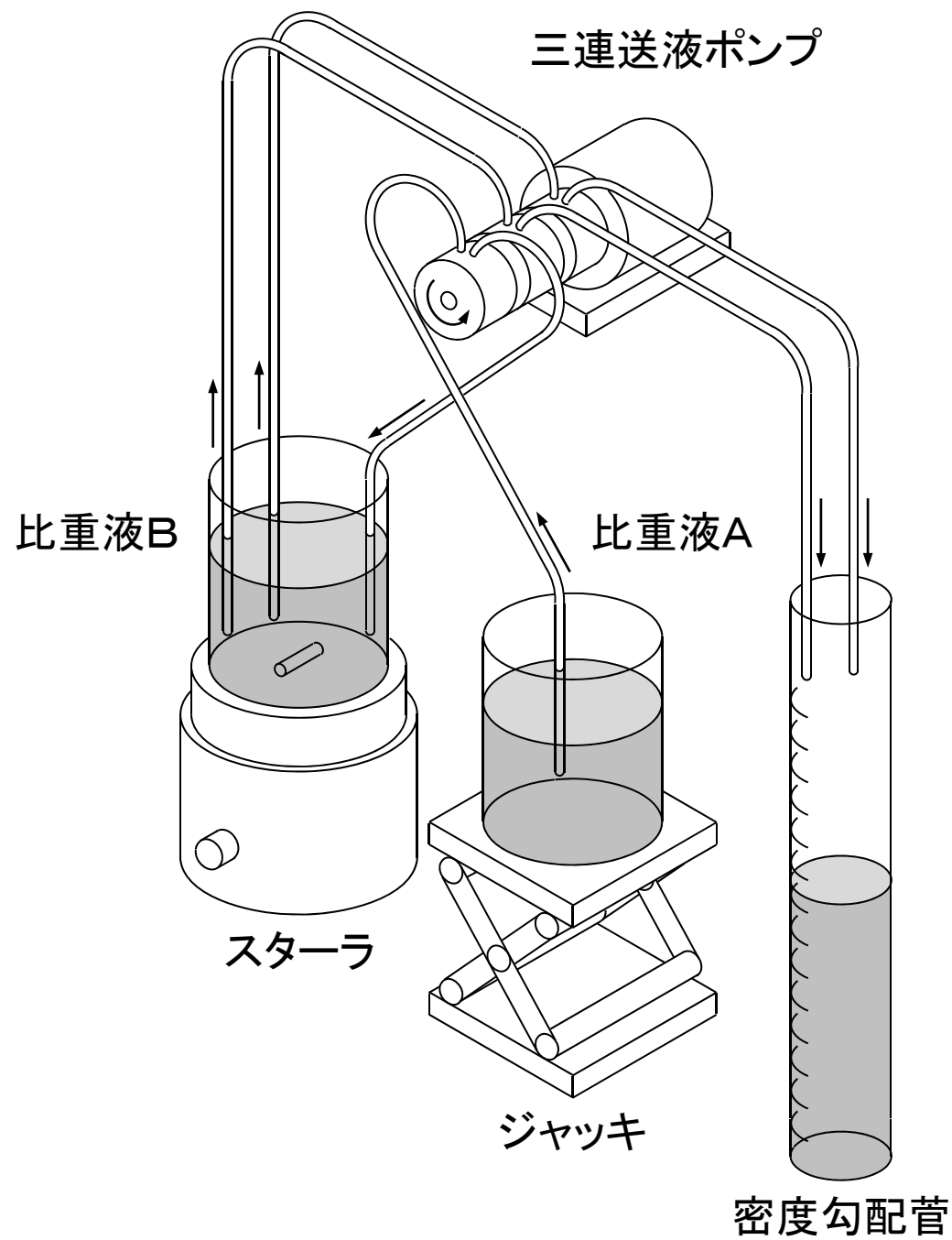
体積分率結晶化度

$$X_c = \frac{\rho_c (\rho - \rho_a)}{\rho (\rho_c - \rho_a)}$$

質量分率結晶化度

$$X_c = \frac{\Delta H_e}{\Delta H_m^0}$$

熱量法(DSC測定)



密度勾配管の作製法

Analysis of crystallinity

X-ray scattering

Principle:

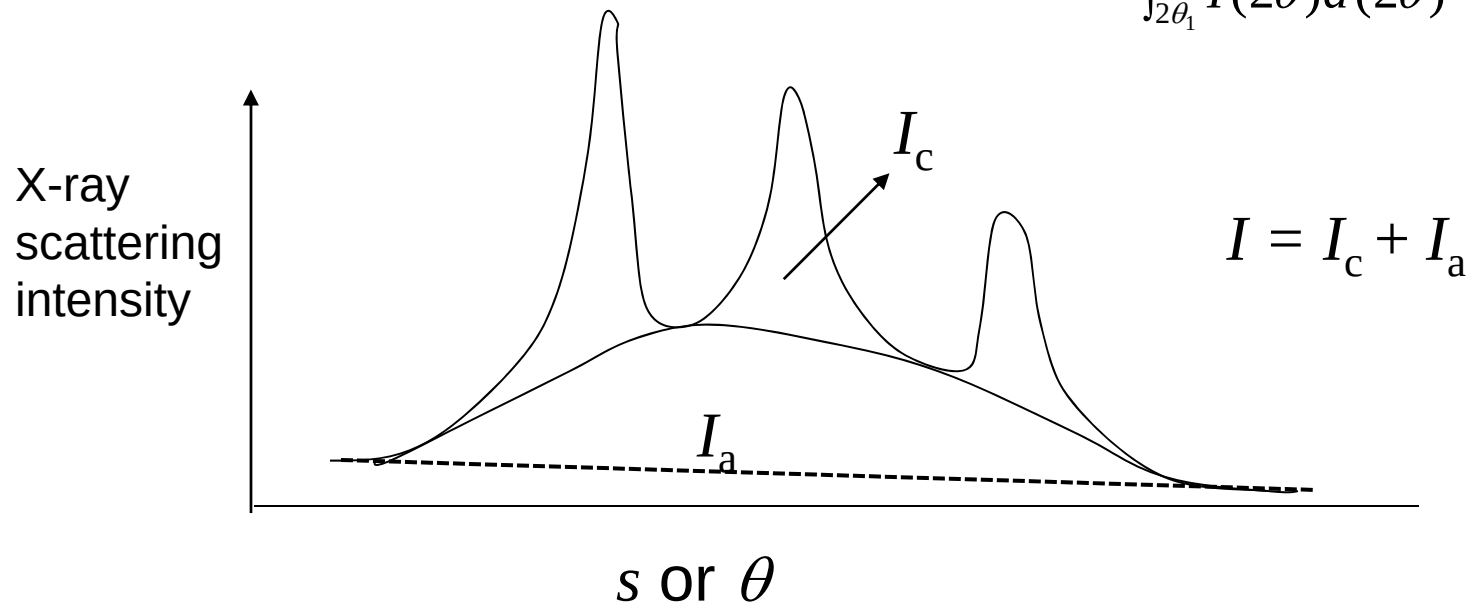
Crystallinity =

scattering intensity from periodic structure
total scattering intensity

$$X_c = \frac{\int_0^\infty s^2 I_c(s) ds}{\int_0^\infty s^2 I(s) ds}$$

Simplified method

$$X_c = \frac{\int_{2\theta_1}^{2\theta_2} I_c(2\theta) d(2\theta)}{\int_{2\theta_1}^{2\theta_2} I(2\theta) d(2\theta)}$$



Other methods for analysis of crystallinity

Density measurement

Volume fraction
crystallinity

$$X_c^v = \frac{\rho - \rho_a}{\rho_c - \rho_a}$$

Mass fraction
crystallinity

$$X_c = \frac{\rho_c}{\rho} \frac{(\rho - \rho_a)}{(\rho_c - \rho_a)}$$

Thermal analysis

DSC (differential scanning
calorimetry)

$$X_c = \frac{\Delta H_e}{\Delta H_m^0}$$