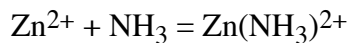
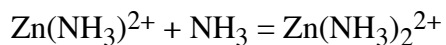


1. Zinc-ammonia complexation

$$K_1 = 180$$

$$\beta_1 = K_1 = 180$$



$$K_2 = 220$$

$$\beta_2 = K_1 K_2 = 3.96 \times 10^4$$



$$K_3 = 250$$

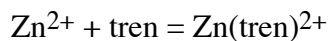
$$\beta_3 = K_1 K_2 K_3 = 9.90 \times 10^6$$



$$K_4 = 110$$

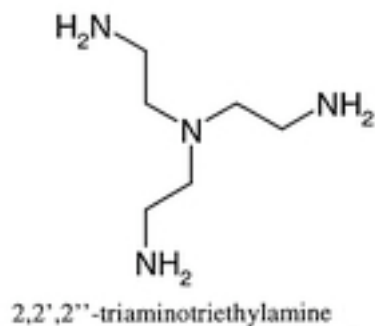
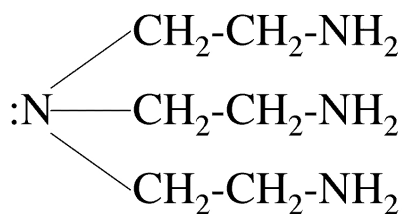
$$\beta_4 = K_1 K_2 K_3 K_4 = 1.09 \times 10^9$$

$$\alpha_{\text{Zn}^{2+}} = \frac{1}{1 + K_1[\text{NH}_3] + K_1 K_2 [\text{NH}_3]^2 + K_1 K_2 K_3 [\text{NH}_3]^3 + K_1 K_2 K_3 K_4 [\text{NH}_3]^4}$$

2. Zinc-tren complexation

$$K_f = \beta_1 = 4.5 \times 10^{14}$$

tren = triaminotriethylamine



$$\alpha_{\text{Zn}^{2+}} = \frac{1}{1 + K_f[\text{tren}]}$$