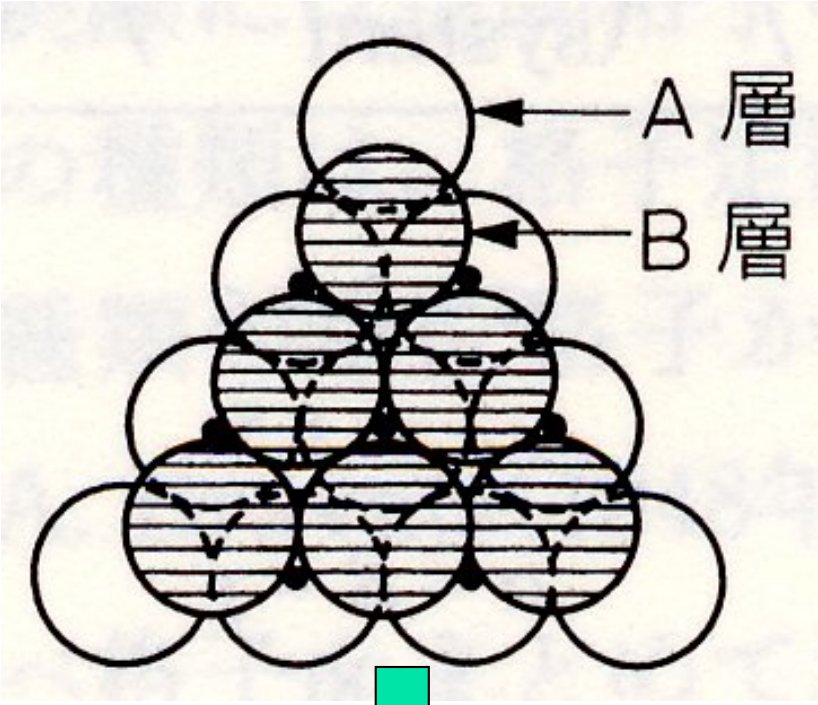
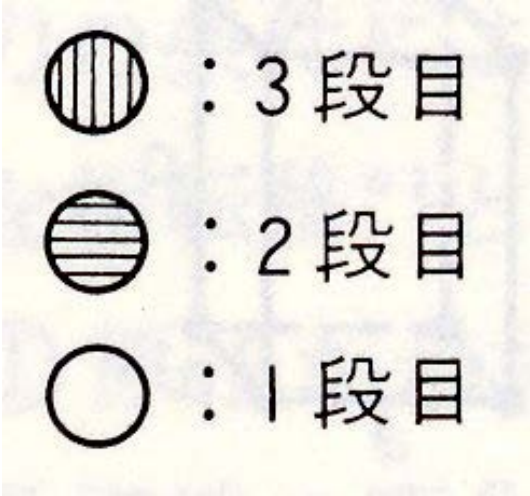
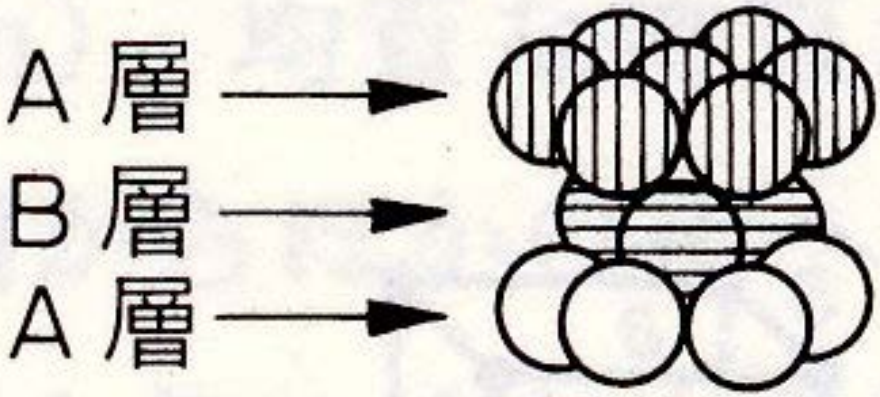
最密充填

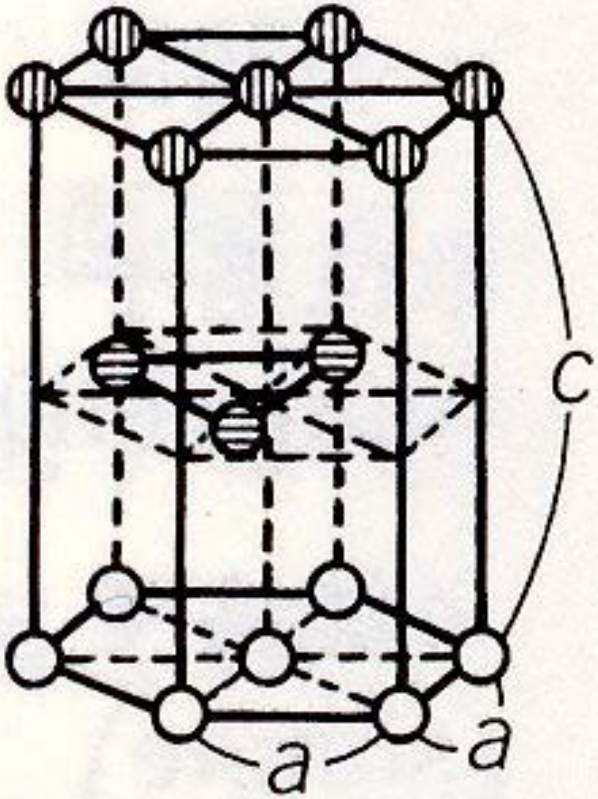




3段目の並び方：2通り

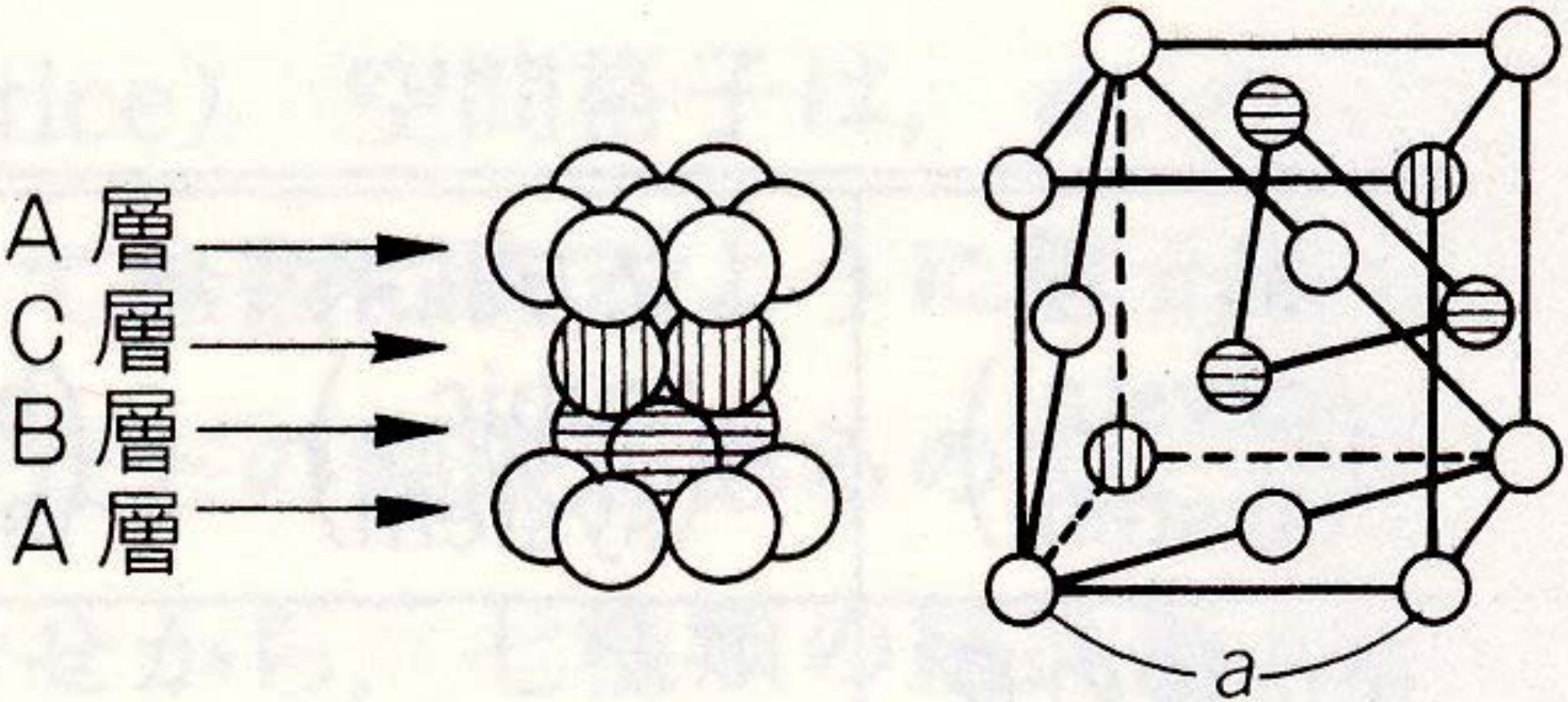
六方最密充填





(c) 六方最密格子（3段目が●印の上にきた場合）

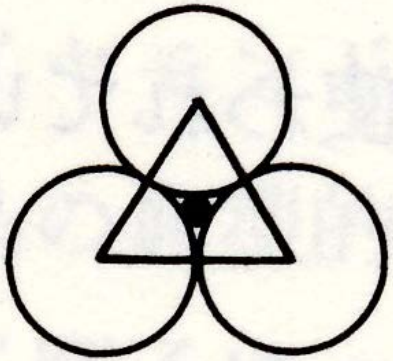
立方最密充填



(b) 立方最密格子（3段目が○印の上にきた場合）

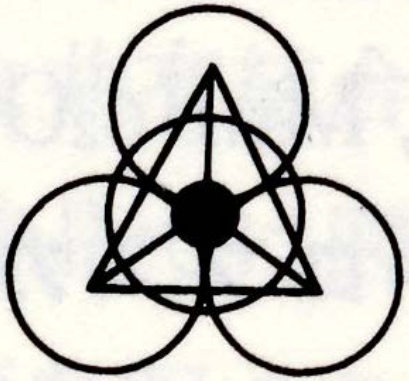
イオン結晶における配位数

3配位（三角形）



半径比　0.155～0.225
理論比は 0.155

4配位（正四面体）

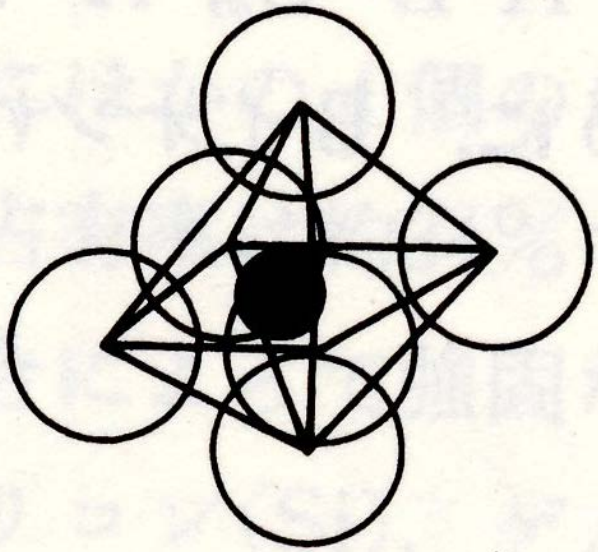


半径比　0.225～0.414
理論比は 0.225

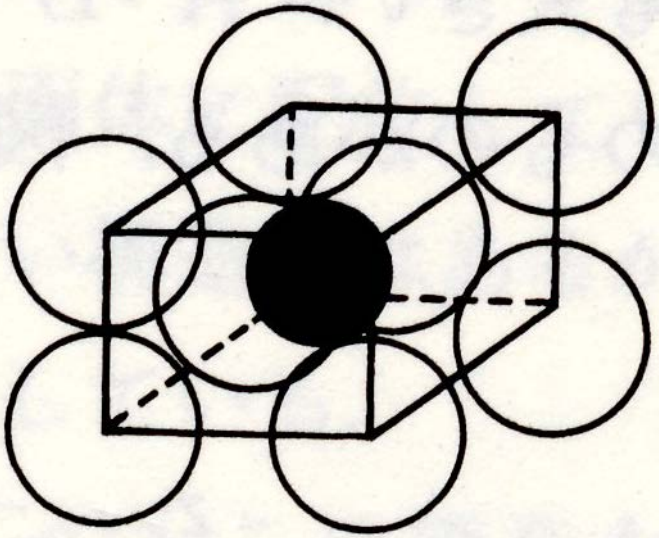
● 陽イオン　○ 陰イオン　半径比　r_+/r_-

イオン結晶における配位数

6配位（正八面体）



8配位（立方体）



半径比　0.414〜0.732
理論比は 0.414

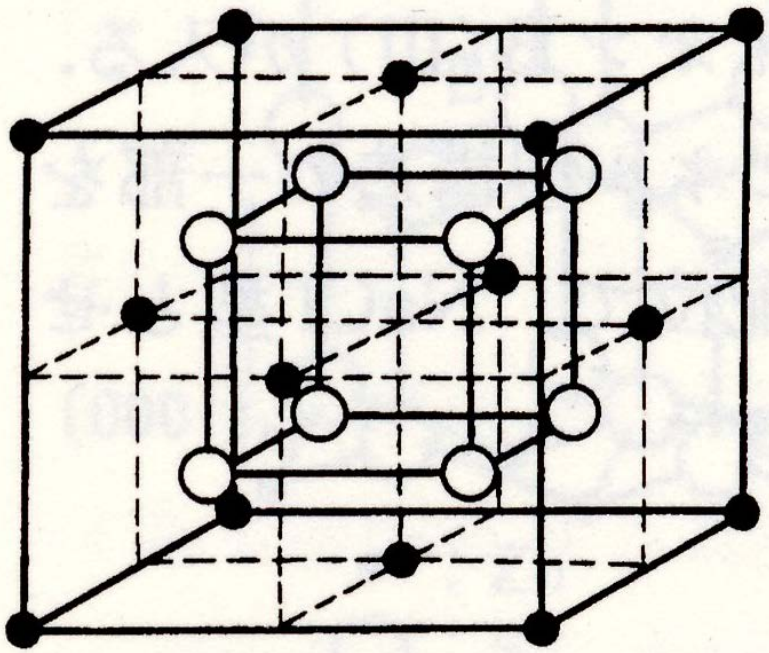
半径比　0.732〜1.000
理論比は 0.732

酸化ジルコニア　ZrO_2

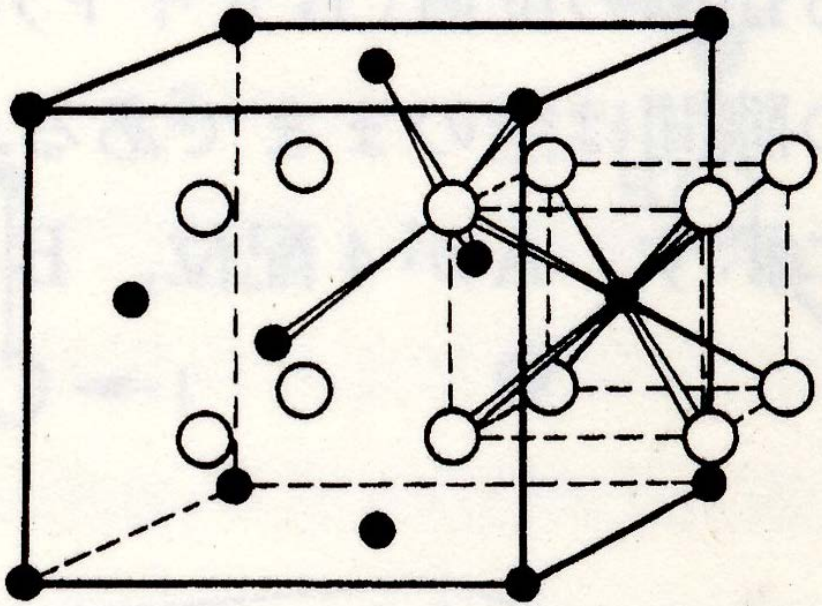
●：Ca
○：F

ホタル石(CaF_2)型構造

$$ZrO_2 \quad \text{単斜晶系} \xrightleftharpoons{1170^\circ C} \text{正方晶系} \xrightleftharpoons{2370^\circ C} \text{立方晶系}$$

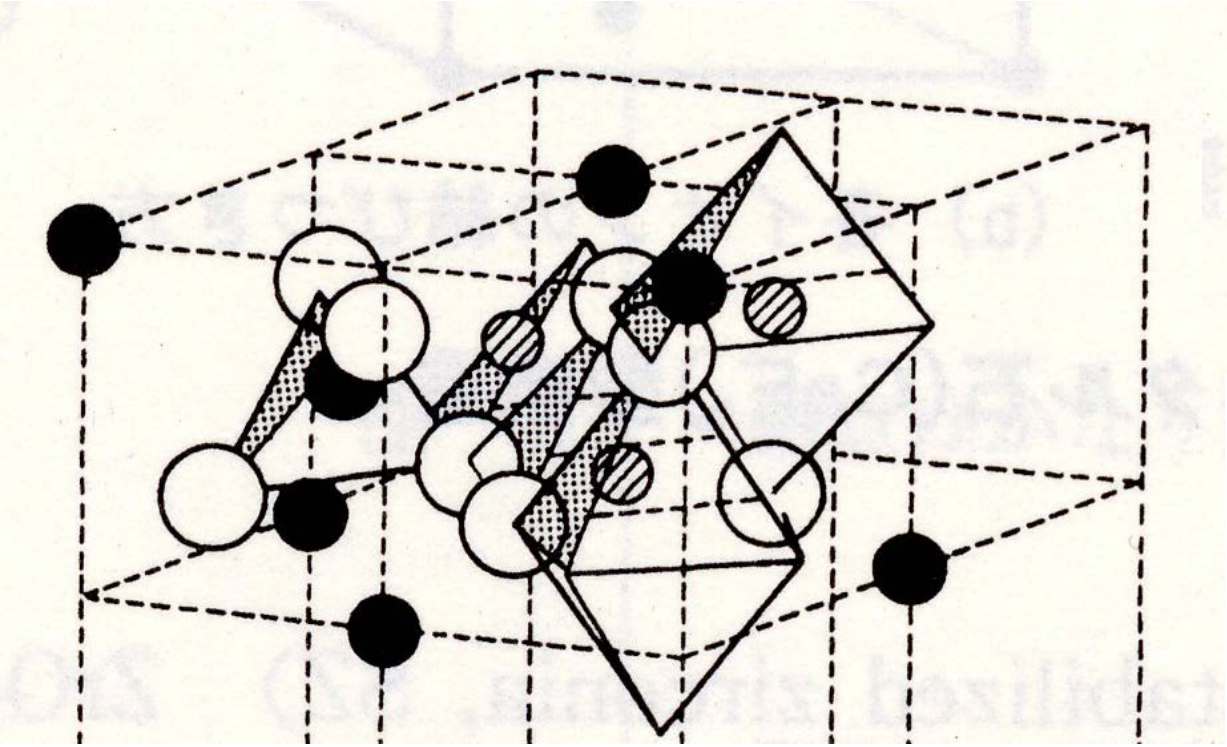


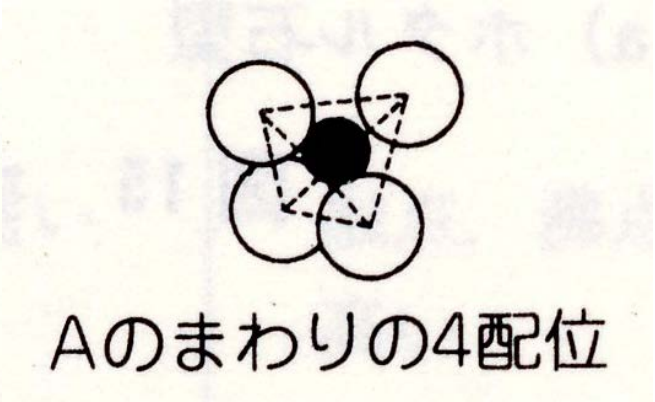
(a) ホタル石型



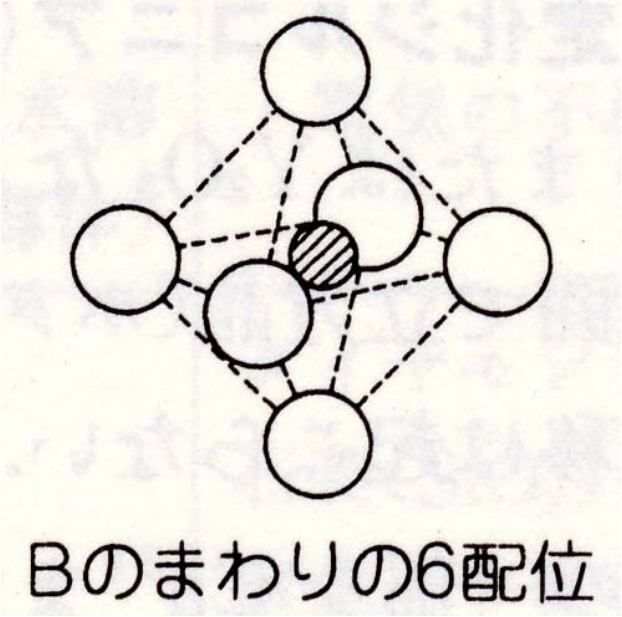
(b) 各イオンの結びつき方

スピネル型構造(AB_2O_4)





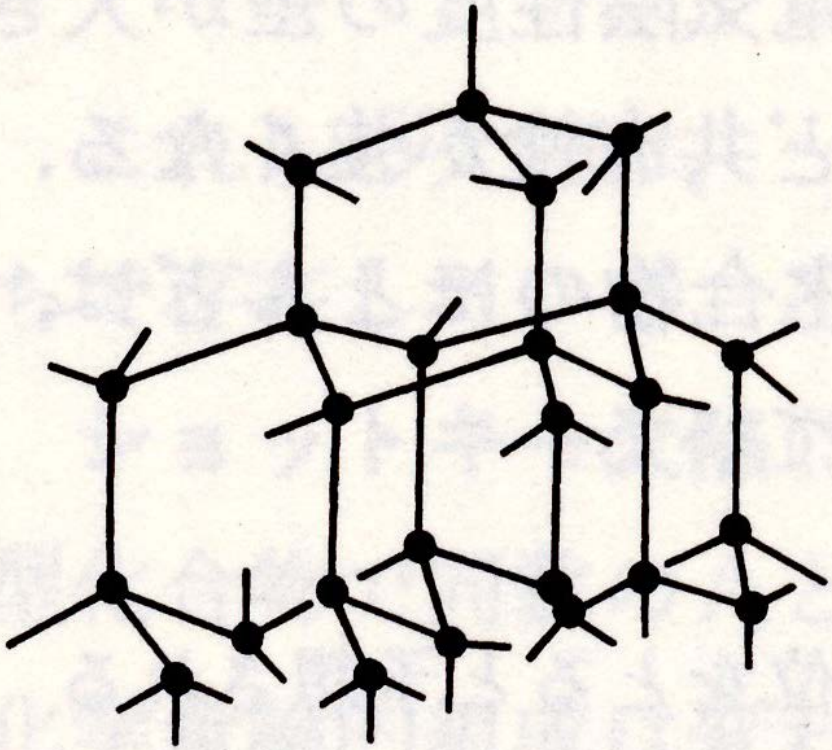
Aのまわりの4配位



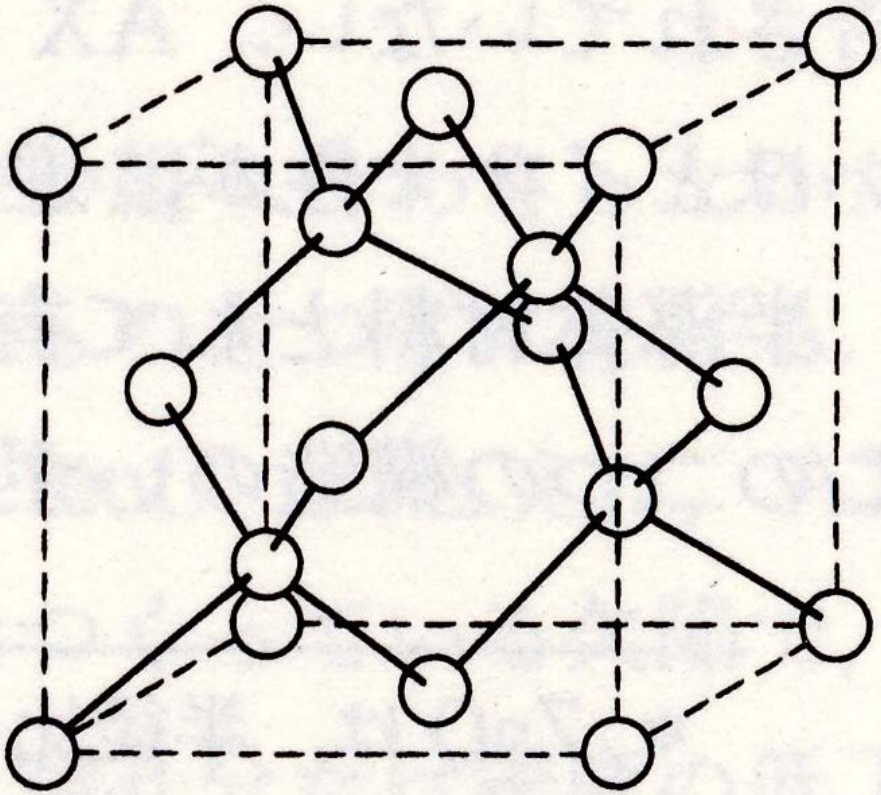
Bのまわりの6配位

●：A　◍：B　○：O

ダイヤモンドの結晶構造



(a) ダイヤモンドの結晶



(b) 単位格子