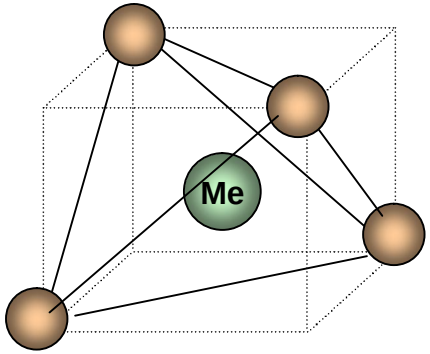
Ground-State Splitting of ^5D ions in Crystal-Field

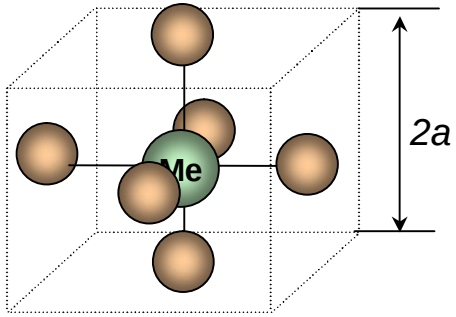
^5D ions : *V^+, $\underline{Cr^{2+}}$, Mn^{3+}, Fe^{4+}; Mn^+ , $\underline{Fe^{2+}}$, Co^{3+}, Ni^{4+}*

Tetrahedral Coordination [4]



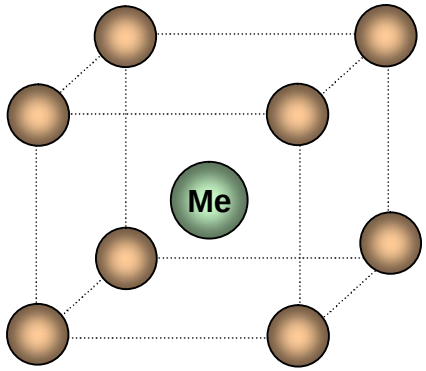
ZnSe, ZnSe…

Octahedral Coordination [6]

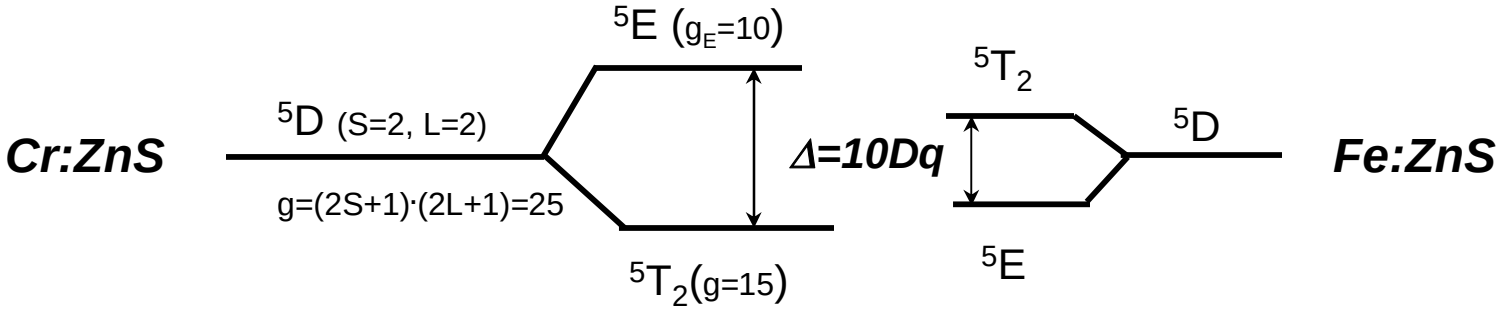


MgO

Cubic Coordination [8]



CaF_2

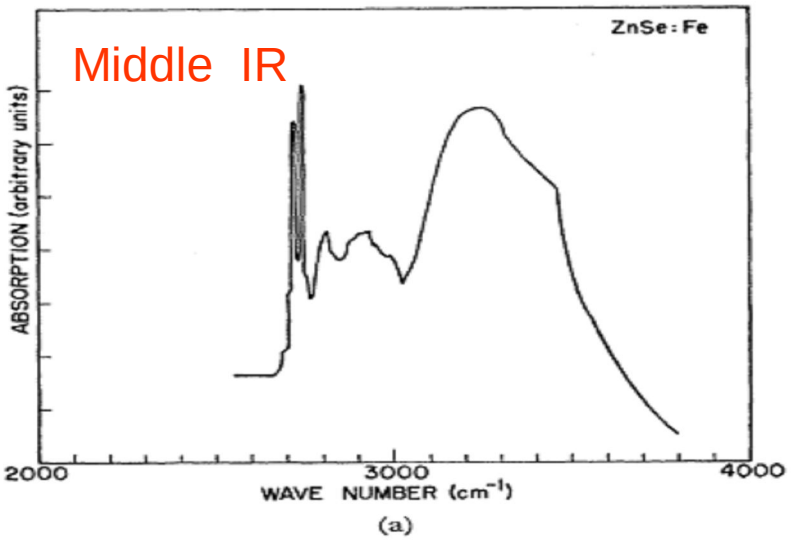


Dq (octahedral)=- 9/4 Dq (tetrahedral)=-9/8 Dq (cubic)

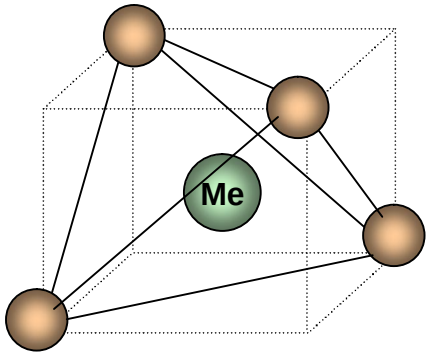
visible and near IR transitions **middle IR transitions !!!**

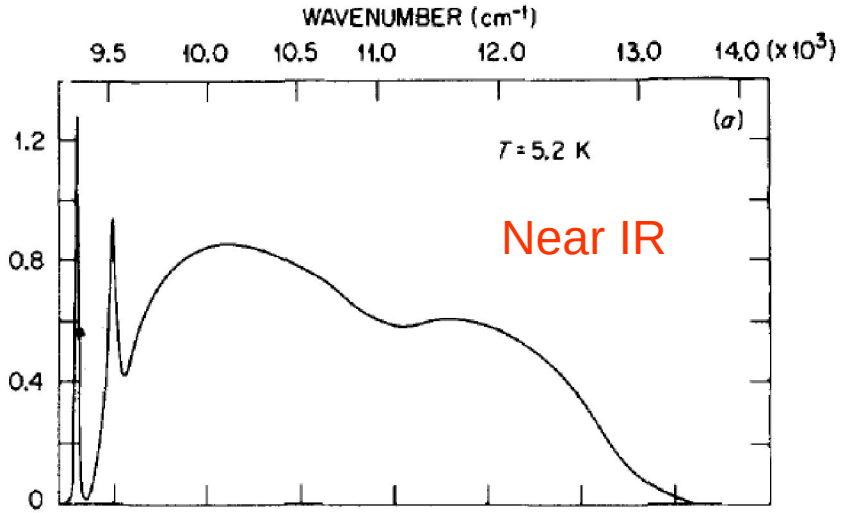
Dq (Cr^{2+})> Dq (Fe^{2+})

Fe^{2+} absorption spectra in the Tetrahedral and Octahedral coordination



Fe^{2+}:ZnSe





Fe^{2+}:MgO