

# Impurity Ions in Optical Materials: Calculations of Spectroscopic Properties

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Transition metal and rare earth ions with unfilled 3d and 4f electron shell are widely used in optical applications as emitting ions in laser crystals and phosphors. In this work an overview of basic electronic and spectroscopic properties of these ions in a free state and in crystal fields of various symmetries will be given [1]. Special attention is paid to the energies of electronic transitions used for getting visible emission for lighting, especially for the use in white light emitting diodes.

The main factors that affect positions of the emission peaks and their intensity will be highlighted [2-4]. Examples of an analysis of the impurity ions energy levels based on the crystal field theory and ab initio methods are discussed in detail [5].

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## References

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