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# A PHOTOLUMINESCENCE STUDY OF $ND^{3+}$ DOPED DIFFERENT CHLORO-PHOSPHATE GLASSES FOR SOLID STATE LASER APPLICATIONS

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## ABSTRACT

Investigations of glasses as host materials for rare earth fluorescence with potential for laser is confined to borate, phosphate, silicate, tellurite and fluoride glasses. Glass materials are attractive hosts because planer waveguides and optical fibers can be fabricated easily compared to crystalline materials. Absorption and emission spectra of 1mol% of $Nd^{3+}$ doped different chlorophosphate glasses have been studied. By applying, Judd-Ofelt theory, three intensity parameters $\Omega_2$, $\Omega_4$ and $\Omega_6$. These parameters are useful to evaluate the radiative properties such as radiative transition probabilities ($A_{rad}$), branching ratios (ß), integrated absorption cross-sections ($\Sigma$), radiative lifetimes ($\tau_R$). From emission spectrum, emission cross-sections ($\sigma p$) is calculated for all chlorophosphate glasses and reported.

**KEYWORDS:** Absorption Spectra, Phosphate Glasses, Emission Spectra, Rare Earth Ions