

## *Optical absorption of sodium boro vanadate glass system*

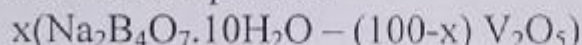
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### **Abstract**

Glass system of composition



where  $x = 5, 7.5, 10, 12.5, 15$  and  $20$  mol %, and the silver oxide ( $\text{Ag}_2\text{O}$ ) is added as weight percentage (0.001) were prepared from the powder form of (Analar – grade).

Optical absorption measurements in the spectral range (325 – 2500 nm) were carried out at room temperature. No sharp absorption edges was observed indicating the non – crystalline nature of the samples. It is observed that the fundamental absorption edge shifts to higher wavelength (low energy) with increasing  $\text{V}_2\text{O}_5$  content. However the sample containing 10-mol %  $\text{V}_2\text{O}_5$  exhibit opposite trend. The optical band gap for all compositions ranging between 3.85 eV and 3.9 eV. However sample of 10  $\text{V}_2\text{O}_5$  exhibit high value 4.2 eV. The value of  $E_g$  shows slight decrease by increase  $\text{V}_2\text{O}_5$  mol %. The optical absorption spectrum exhibits one band at  $27780 \text{ cm}^{-1}$  characteristic of  $\text{VO}^{2+}$  ions in tetragonal symmetry. The band has been assigned as  $2\text{B}_{2g} \rightarrow 2\text{B}_{1g}$  transition.