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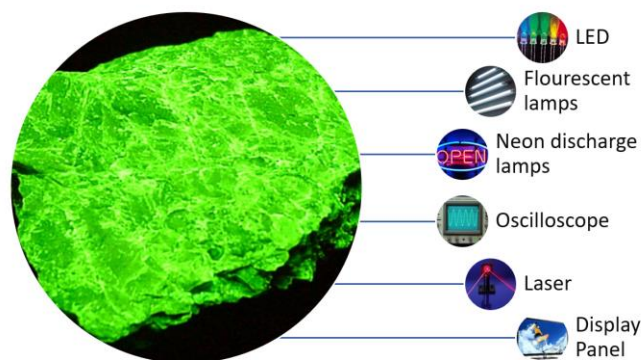
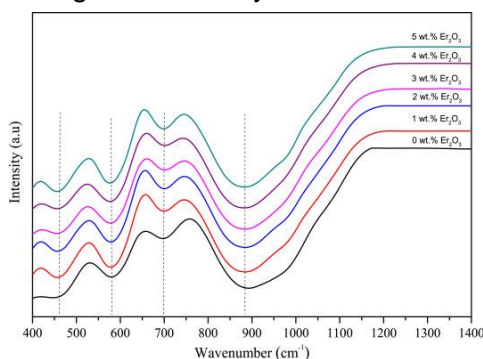
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RESEARCH HIGHLIGHTS

1. Willemite Composite Phosphor for Potent Optoelectronic Applications

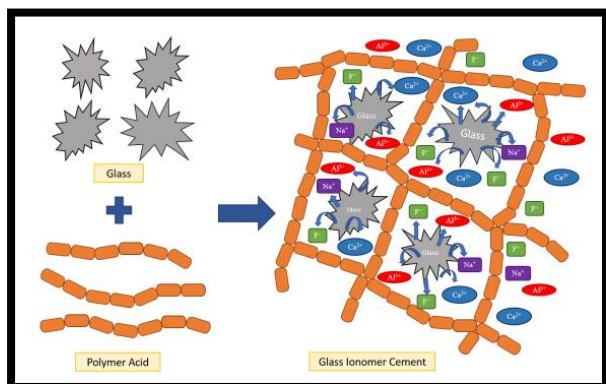
Luminescent materials such as phosphors are the substances that emit light in the electromagnetic wave's spectrum after the conversion of the absorbed energy from an energy source. The interests in willemite phosphor also due to their interesting properties, having good thermal and chemical stability, excel in water resistance with better resistance to nuclear radiation as well as exhibits excellent luminescence properties when homogenously grows with an inorganic oxide crystal.



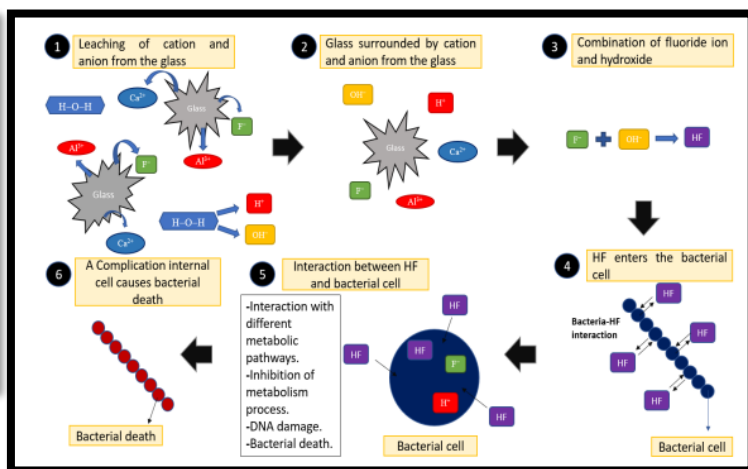
$Zn_2SiO_4:Er^{3+}$ absorption spectra with variations of Er_2O_3 concentration

2. Glass Ionomer Cement Derived from $SiO_2-CaO-CaF_2-Al_2O_3-P_2O_5$ glass system

The fabrication of glass ionomer cement, GIC derived from $SiO_2-CaO-CaF_2-Al_2O_3-P_2O_5$ shows the additive of fluoride ion in the CFAS glass system act as an anti-cariogenic agent which can prevent the formation of plaque on the surface of the enamel. The calculated Ca:P ratio between 1.31 and 2.18 shows CFAS has high potential for biological implantation material.



The illustration of GIC during setting time reaction



The mechanism of GIC in inhibition of the bacterial by leaching the fluoride ion