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OPTICAL AND SPECTROSCOPIC PROPERTIES OF Sm2O3 DOPED CABAL

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Rare earth (RE) ions are present in most modern technology as active ions in many optical materials. RE-doped glasses are used in many optical devices because of abundant number of the absorption an emission bands arising from the transitions between the RE elements energy levels. The calcium boroaluminate (CaBAl) glass is an important class of optical materials due to its many applications, among them the use as active media for solid state lasers. CaBAl glasses are chemically stable, easy glass formation, show excellent mechanical and thermal properties and wide range of transparency at wavelengths from visible to near infrared. Among trivalent RE ions, Sm3+ ion is one of the widely used ions with applications in high-density optical storage, LEDs and color display. Its emitting 4G5/2 level exhibits relatively high quantum efficiency and also shows different quenching emission channels, that can be used in new light sources, fluorescent displays devices, UV-sensor and visible lasers. CaBAl glass with composition of (25-x)CaO-50B2O3-15Al2O3-10CaF2-xSm2O3 with samarium concentration varying from 0.5 to 7 wt% have been prepared by using melt-quenching method. The aim of this work were report the results of a study of CaBAl glasses doped with Sm2O3 up to 7 wt%. Results of refractive index, optical absorption, emission lifetime, luminescence at room temperature and luminescence varying the temperature are discussed in function of Sm2O3.