

Temperature dependence of host-associated luminescence from YAG transparent ceramic material.

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We have prepared yttrium aluminum garnet (YAG) in the form of a transparent optical ceramic and measured its spectroscopic properties as a function of temperature. The measurements reveal the presence of at least three distinct types of luminescent defects. These defects are both distinct in nature and more abundant in number than in the corresponding single crystal. While all three emit at low temperatures, only one persists all the way up to and above room temperature. We have demonstrated that energy transfer processes take place between some of the centers. And finally, from the temperature-dependent shapes of the emission and excitation spectra, we have derived an energy level schematic that accurately describes the transfer processes that occur upon stimulation of the various centers.

Słowa kluczowe

Optical ceramic, Defect luminescence, Yttrium aluminum garnet (YAG)

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