Luminescence properties of Yb^{3+} - doped bismuthate glass.

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Streszczenie

The luminescence property parameters of the Yb3+-doped bismuthate glass are investigated, and the energy transfer from those defect quenching centers such as Yb2+ and Bi3+ to Yb3+ is also discussed. Based on the optimized matrix composition and without the sharp decline of the fluorescence lifetime, the near-infrared emission cross-section of Yb3+ in glass is obviously increased, the absorption cross-section is reduced, and the capability of laser gain and the saturation pump intensity are both enhanced. By the efficient dehydroxyl process, the luminescence quenching effect of Yb3+ in the bismuthate glass may not be stronger than that in the phosphate glass. However, there exist probably some defect quenching centers such as Bi3+ and Yb2+ with unstable valence states in the bismuthate glass.

Słowa kluczowe

materials, luminescence properties, laser evaluation parameters, radiation trapping effect, energy transfer, yb3+ doped bismuthate glass

Adres publiczny

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