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Er³⁺-doped Oxyfluorogallate Glass for 2.7 μm Solid-State Lasers

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Abstract: An Er³⁺-doped oxyfluorogallate glass is investigated as a laser material with 2.7 μm emission. The 2.7 μm emission properties of the Er³⁺-doped oxyfluorogallate glasses are obtained using a 980 nm laser diode and their spontaneous transition probabilities and branching ratios are predicted using Judd–Ofelt theory. The maximum value of emission cross-section of Er³⁺ around 2.7 μm reached $1.32 \times 10^{-20} \text{ cm}^2$, which suggests a very promising application of oxyfluorogallate glass for efficient 2.7 μm solid-state laser system.

Key words: Rare earth-doped materials; Glass; Laser materials; Spectroscopy; Mid-infrared.

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