

BaLiF₃ : Ni²⁺
Spectroscopic Analysis of Laser Capabilities

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The properties of transition metal ions in insulating matrices have received renewed interest in recent years mainly as an outcome of their potential usefulness for construction of vibronic solid state lasers. Ions with the configuration 3d provide particularly appropriate such candidates since in this case the ³T₂ state approaches or fall below the ³A₂ state and gives rise to broad vibronic emission.

Host materials doped with Ni²⁺ in octahedral sites show a vibronically broadened emission band in the near infrared around 1,5 μm, with is useful for tunable solid state lasers. Although Ni²⁺ in this symmetry is being investigated since 1963 [L.F.Johnson et all, Phys. Rev. Lett., 11,318(1963)], CW-operation at room temperature has not yet been achieved. We have investigated the spectroscopic properties of new Ni²⁺ doped perovskite, BaLiF₃, as potential new laser materials.

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