

Growth and Properties of KTiOPO₄ Single Crystals doped with Er and Nd

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KTiOPO₄ (KTP) single crystals are of great interests due to their ferroelectric and nonlinear optical properties. Last time the attention is given to the investigation of KTP-family crystals doped with rare earth and codopant ions as the material for self-doubling [1,2].

In the present work single crystals of KTP codoped with Ln = Er, Nd and Me = Nb, Ta, Ba, Ca, Mg, Bi, Al, Si, KCl were grown by means of flux method and some properties were investigated.

The investigations show that an addition of Nb and Ba leads to decreasing of KTP:Ln:Me optical quality, whereas the quality increases with KCl and Bi and does not markedly depends on Ln.

Maximum luminescence intensity was observed in KTP:Er:Nb crystals. Life time of ⁴F_{3/2}Nd³⁺ and ⁴I_{13/2}Er³⁺ has been found as 250 μs and 6 ms for KTP:Nd and KTP:Er respectively. In KTP:Ln:Me the life time changes in the area of 1 - 7 ms for ⁴I_{13/2}Er³⁺ and 180 - 300 μs for ⁴F_{3/2}Nd³⁺ depending on the codopant of ion Me.

The presence of Ln ions in KTP:Ln:Me crystals does not strongly affect on ferroelectric phase transition temperature, but suppresses the dielectric permittivity peak caused by the above-named transition.

[1] Sole R., Nikolov V., Koseva I., et al., *Chem. Mater.*, 1997, **9**, 2745. [2] Carvajal J. J., Nikolov V., Sole R., et al., *Chem. Mater.*, 2002, **14**, 3136.

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