

A new family of NLO crystals $\text{MSr}_3\text{Be}_3\text{B}_3\text{O}_9\text{F}_4$ (M=Na, Li) for 266nm generation: crystal growth and optical properties

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High power of solid-state UV lasers especially with wavelength of 266nm are quite important for various applications including material processing, semiconductor inspection and medical treatment [1-3]. The key source is the nonlinear optical (NLO) crystals for frequency doubling generation. Nowadays excellent UV NLO crystals are still lacking for high power of 266nm generation, so it is still urgent to search for new UV NLO crystals.

A new family of NLO crystals $\text{MSr}_3\text{Be}_3\text{B}_3\text{O}_9\text{F}_4$ (M=Na, Li) were designed and synthesized in our group [4,5]. Crystals of $\text{MSr}_3\text{Be}_3\text{B}_3\text{O}_9\text{F}_4$ (M=Na, Li) were grown by the top-seeded solution growth method. The optical properties including transmittance spectrum, refractive index were measured for both crystals. Their abilities for the fourth harmonic generation at 266nm were evaluated and compared. The results indicate that $\text{MSr}_3\text{Be}_3\text{B}_3\text{O}_9\text{F}_4$ (M=Na, Li) are potential UV NLO crystals for 266nm generation.

References

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