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## All-solid-state subnanosecond tunable ultraviolet laser sources based on Ce<sup>3+</sup>-activated fluoride crystals

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### Abstract

Several practical all-solid-state tunable ultraviolet subnanosecond laser sources have been developed based on Ce<sup>3+</sup>:LiLuF<sub>4</sub> (Ce:LLF) and Ce<sup>3+</sup>:LiCaAlF<sub>6</sub> (Ce:LiCAF) active media pumped by the fifth and fourth harmonics of a regular Q-switched 10-ns Nd:YAG laser, respectively. The demonstrated tuning range of the Ce:LiCAF oscillator providing reproducibly-single-pulse output was 282 nm to 314 nm with the maximum output energy of 1 mJ. Tunable laser output from 223 nm to 232 nm was obtained by sum-frequency-mixing Ce:LiCAF laser output with fundamental output of a Q-sw Nd:YAG laser. The maximum subnanosecond Ce:LiCAF single-pulse output of 14 mJ was obtained in a "master oscillator-power amplifier" (MOPA) configuration.

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