

IEEE Journal of Selected Topics in Quantum Electronics 1995 vol.1 N3, pages 792-804

---

## Ce<sup>3+</sup>-Activated Fluoride Crystals as Prospective Active Media for Widely Tunable Ultraviolet Ultrafast Lasers with Direct 10-ns Pumping

Sarukura N., Liu Z., Segawa Y., Dubinskii M., Semashko V., Naumov A., Korableva S., Abdulsabirov R., Edamatsu K., Suzuki Y., Itoh T.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

New possibilities have been investigated for recently developed solid-state tunable ultraviolet (UV) laser materials such as Ce<sup>3+</sup> ion-activated LuLiF<sub>4</sub> (LLF) and LiCaAlF<sub>6</sub> (LiCAF). With their broad-gain width, demonstrated reliability, and high efficiency, they are attractive for ultrashort pulse generation and amplification. To prove that, we have demonstrated UV picosecond-pulse amplification using Ce : LLF. For such new laser materials, we proposed a passive self-injection seeding scheme for the direct generation of short-pulse trains, which does not require CW-operation capability or an external short-pulse seeding laser. Using this simple scheme, a UV sub-nanosecond pulse train is directly and passively generated from Ce:LLF pumped by a standard 10-ns KrF excimer laser, and Ce : LiCAF pumped by the fourth harmonic of a conventional 10-ns Q-switched Nd : YAG laser. © 1995 IEEE

<http://dx.doi.org/10.1109/2944.473661>

---