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Passively mode-locked laser performance of Yb:KLuW —
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Yb-doped laser materials have received much attention for the generation of ultrashort pulses. One of the most promising results have been obtained with the monoclinic double tungstates Yb:KGW and Yb:KYW [1]. The novel Yb-doped tungstate host KLuW [2] was investigated applying diode- and Ti:Sa-pumped laser schemes. The mode-locked laser performance of Yb:KLuW was compared in the pico- and femtosecond regime for the polarization parallel to the crystallo-optic Nm- and Np-axis. Using end-pumped configurations and a semiconductor saturable absorber (SAM) in a standard type-z laser cavity, laser operation in the 100fs-range with an average power up to 300mW around 1045nm was achieved. Pulses as short as 81fs duration could be generated at a repetition rate of 94MHz with a time-bandwidth product of 0.32. The demonstrated pulse durations are the shortest obtained with Yb-doped tungstate-based oscillators mode-locked with SAM.

[1] P. Klopp et al., Opt. Express 10, 108 (2002). [2] X. Mateos et al., IEEE J. Quantum. Electron. 40, 1056 (2004).

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