

High power cw laser source at 780 nm generated from a frequency doubled fiber laser

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We report on the generation of over 270 mw of cw 780 nm light using single pass quasi-phase matched second harmonic generation in periodically poled lithium niobate (PPLN). Approximately 5 W of 1560 nm light is produced by amplifying a distributed feedback (DFB) laser with an erbium doped fiber amplifier. The output of the fiber amplifier is confocally focused into a 5 cm long PPLN crystal. The resulting SH light can be continuously tuned over more than 20 GHz (easily covering the spectrum of rubidium D2 lines) without adjusting the crystal temperature. We will discuss the characterization of our laser source, which we believe will be an enabling capability to enhance laser cooling experiments, including those planned for space applications.