

## **High-energy 450-MHz CdSiP<sub>2</sub> picosecond optical parametric oscillator near 6.3 microns for biomedical applications**

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We report a compact, efficient, high-energy and high-repetition-rate mid-infrared picosecond OPO based on a new nonlinear material CdSiP<sub>2</sub>. The OPO is synchronously pumped by a master-oscillator power-amplifier system at 1064.1 nm, providing 1- $\mu$ s-long macro-pulses constituting 8.6 ps micro-pulses at 450 MHz, and can be tuned over 486 nm across 6091-6577 nm, covering the technologically important wavelength range for surgical applications. Using a compact cavity (~30 cm) and a CdSiP<sub>2</sub> crystal, idler macro-pulse energy as high as 1.5 mJ has been obtained at 6275 nm, for an input energy of 30 mJ. The extracted signal pulses have durations of 10.6 ps.