

## Tuning range and output power optimization of an external-cavity GaN diode laser at 455 nm - DTU Orbit (08/11/2017)

### Tuning range and output power optimization of an external-cavity GaN diode laser at 455 nm

In this paper we discuss how different feedback gratings affect the tuning range and the output power of external feedback diode laser systems. A tunable high-power narrow-spectrum external-cavity diode laser system around 455 nm is investigated. The laser system is based on a high-power GaN diode laser in a Littrow external-cavity. Both a holographic diffraction grating and a ruled diffraction grating are used as feedback elements in the external cavity. The output power, spectral bandwidth, and tunable range of the external cavity diode laser system are measured and compared with the two gratings at different injected currents. When the holographic grating is used, the laser system can be tuned over a range of 1.4 nm with an output power around 530 mW. When the ruled grating is used, the laser system can be tuned over a range of 6.0 nm with an output power around 80 mW. The results can be used as a guide for selecting gratings for external-cavity diode lasers for different requirements. (C) 2016 Optical Society of America

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