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HDM at 2000-2200 nm with -1000 fs^2

Following the recent trend developing near IR high power lasers there is an increased demand on high dispersive, low loss oscillator optics. The presented HD1501 mirrors close this gap and suit ideally Tm and Ho oscillators with unprecedented specification

R (5° AOI, 2000nm – 2200nm, p- pol.) > **99.9%**

GDD (5° AOI, 2000nm – 2200nm, p- pol.)~ **-1000fs²**

A broadband highly dispersive mirror for Thulium and Holmium lasers has been successfully produced and used on the daily basis. HD1501 supports the spectral range from 2000 nm to 2200 nm and provides a group delay dispersion of -1000 fs^2 (see Fig. 1). The mentioned mirror is a critical element for Tm and Ho based lasers and paves the way for the development of ultrafast 2 μm lasers with sub-100 fs pulse duration.

The absolute reflectance reaches up to 99.95% (see Fig. 2), which allows their applications inside laser oscillators that are sensitive to mirror losses. Excellent spectral performance as well as proven group delay dispersion enable its application in extra-cavity temporal pulse-compression and intracavity dispersion compensation in next generation 2 μm thin-disk oscillators.

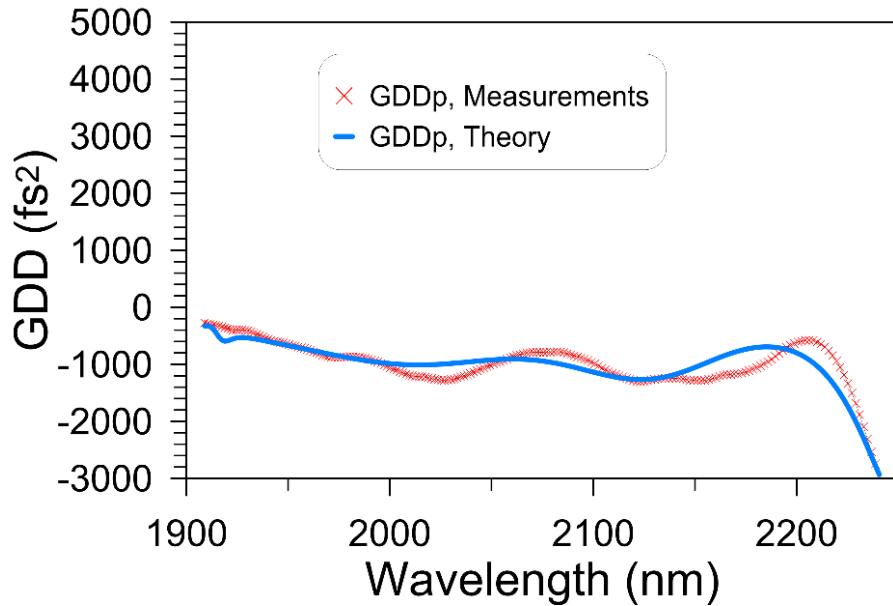


Fig. 1 Theoretical and measured GDD of HD1501 with -1000 fs^2 [1].

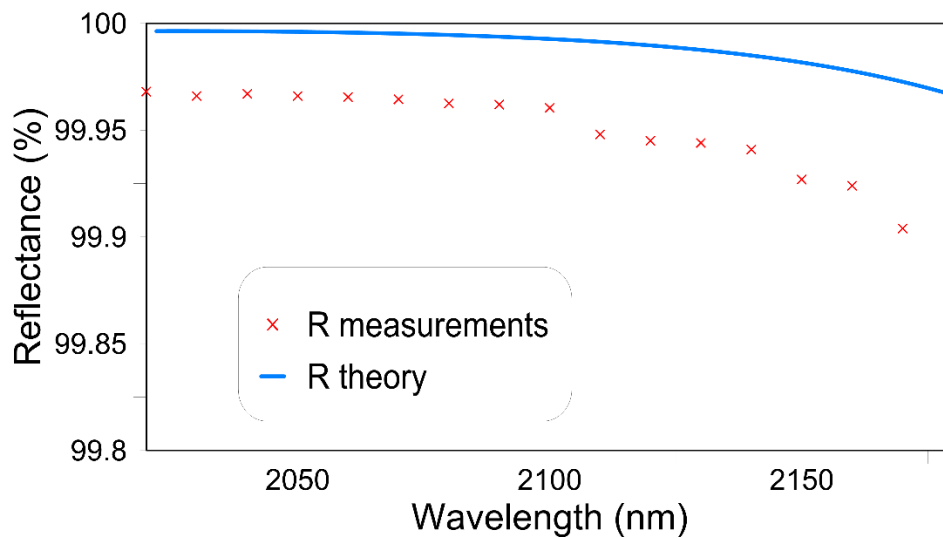


Fig. 2 Theoretical and measured reflectance of HD1501 [1].

Reference:

[1] T. Amotchkina, M. Trubetskov, F. Habel, Yu. Pervak, J. Zhang, K. Mak, O. Pronin, F. Krausz, and V. Pervak, "Synthesis, fabrication and characterization of a highly-dispersive mirrors for the $2 \mu\text{m}$ spectral range," Opt. Express 25, 10234-10240 (2017)