



## PLD-Grown Thin Film Saturable Absorbers

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Shaker Verlag Jul 2012, 2012. Buch. Book Condition: Neu. 21x14.8x cm. Neuware - The subject of this thesis is the preparation and characterization of thin films made of oxidic dielectrics which may find their application as saturable absorber in passively Q-switched lasers. The solely process applied for fabrication of the thin films was the pulsed laser deposition (PLD) which stands out against other processes by its flexibility considering the composition of the systems to be investigated. Within the scope of this thesis the applied saturable absorbers can be divided into two fundamentally different kinds of functional principles: On the one hand, saturable absorption can be achieved by ions embedded in a host medium. Most commonly applied bulk crystals are certain garnets like YAG ( $\text{Y}_3\text{Al}_5\text{O}_{12}$ ) or the spinel forsterite ( $\text{Mg}_2\text{SiO}_4$ ), in each case with chromium as dopant. Either of these media was investigated in terms of their behavior as PLD-grown saturable absorber. Moreover, experiments with  $\text{Mg}_2\text{GeO}_4$ ,  $\text{Ca}_2\text{GeO}_4$ ,  $\text{Sc}_2\text{O}_3$ , and further garnets like YSAG or GSGG took place. The absorption coefficients of the grown films of  $\text{Cr}^{4+}$ :YAG were determined by spectroscopic investigations to be one to two orders of magnitude higher compared to commercially available saturable absorbers. For the first time, passive...



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