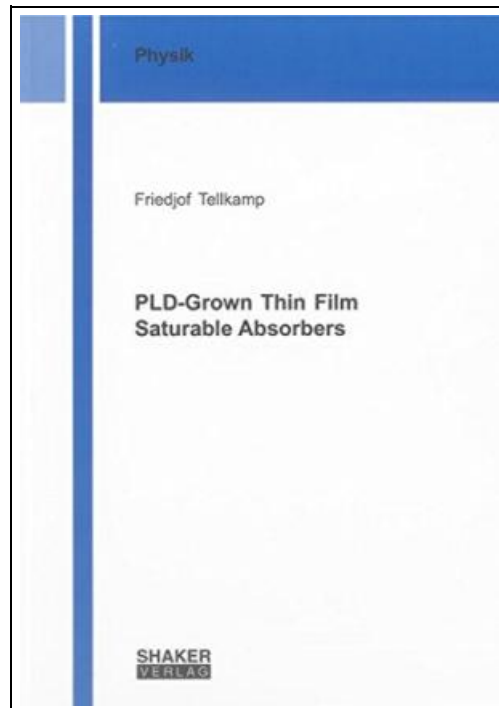


PLD-Grown Thin Film Saturable Absorbers



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This publication is definitely not effortless to get going on looking at but really exciting to read through. It really is rally intriguing through looking at time period. Its been written in an remarkably straightforward way which is just soon after i finished reading through this book where basically altered me, change the way i think.

(Erna Langosh)

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 (Y₃Al₅O₁₂) or the spinel forsterite (Mg₂SiO₄), 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 Mg₂GeO₄, Ca₂GeO₄, Sc₂O₃, and further garnets like YSAG or GSGG took place. The absorption coefficients of the grown films of Cr⁴⁺: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 Q-switching of a Nd:YAG laser at 1064 nm with Cr⁴⁺:YAG thin films could be realized as well as with Cr:Sc₂O₃ thin films. On the other hand, the desirable effect of saturable absorption can also be generated by quantum well structures. For this purpose, several layer system like YAG/LuAG, Cu₂O/MgO, and ZnO/corundum were investigated. It turned out that layer systems with indium oxide (In₂O₃) did not only grew in an excellent way but also showed up a behavior regarding their photo luminescence which cannot be explained by classical considerations. The observed luminescence at roughly 3 eV (410 nm) was assumed to...



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