



## THz Generation and Devices: Design, Fabrication and Characterization

By Matthias Stecher

Cuvillier Verlag Aug 2012, 2012. Taschenbuch. Condition: Neu. Neuware - The THz frequency band (0.1 - 10 THz) is located in between the well explored optical frequencies and the microwave band. Despite growing research efforts in the last two decades, THz sensing systems are far from robust and cost effective. The development of passive devices for THz applications like waveguides, filters, reflectors and modulators is in the beginning of being established. This work contributes to the field by introducing novel polymer filter structures and a new design of THz fibers. These passive devices are fabricated by using a fiber drawing technique to scale down inscribed patterns in polymer to the THz wavelengths. Moreover, the revolutionary quasi time-domain spectrometer approach is further extended to suit varying sensing applications. This work is structured in four chapters. The first chapter describes THz fundamentals and state-of-the-art THz systems for common time-domain (TDS) and continuous wave (CW) spectrometers. The generation and detection principles are discussed in detail and typical system designs are presented. In the second chapter the fabrication and design process of polymer photonic crystal THz waveguides is presented. An improved near-field THz TDS system is introduced to verify the mode distributions. In addition,...



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