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Abstract: We present a new cost-effective terahertz linear polarizer made from a stack of silicon wafers at Brewster's angle, andevaluate its performances. We show that this polarizer is wide-band, has a high extinction ratio (> 6 × 103) and very small insertion losses (< 1%). We provide measurements of the temporal waveforms after linearly polarizing the THz beam and show that there is no distortion of the pulse. We compare its performances with a commercial wire-grid polarizer, and show that the Brewster's angle polarizer can conveniently be used to control the power of a terahertz beam.

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