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Abstract:Utilizing highly oriented multiwalled carbon nanotube aerogel sheets, we fabricated micrometer-thick freestanding carbon nanotube (CNT) polarizers. Simple winding of nanotube sheets on a U-shaped polyethylene reel enabled rapid and reliable polarizer fabrication, bypassing lithography or chemical etching processes. With the remarkable extinction ratio reaching ~37 dB in the broad spectral range from 0.1 to 2.0 THz, combined with the extraordinary gravimetric mechanical strength of CNTs, and the dispersionless character of freestanding sheets, the commercialization prospects for our CNT terahertz polarizers appear attractive.
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