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Title:Broadband terahertz polarizers with ideal performance based on aligned carbon nanotube stacks

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Abstract:We demonstrate a terahertz polarizer built with stacks of aligned single-walled carbon nanotubes (SWCNTs) exhibiting ideal broadband terahertz properties: 99.9% degree of polarization and extinction ratios of  $10^{-3}$  (or 30 dB) from  $\sim 0.4$  to 2.2 THz. Compared to structurally tuned and fragile wire-grid systems, the performance in these polarizers is driven by the inherent anisotropic absorption of SWCNTs that enables a physically robust structure. Supported by a scalable dry contact-transfer approach, these SWCNT-based polarizers are ideal for emerging terahertz applications. © 2012 American Chemical Society.

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