494
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Title:Tunable Terahertz Filter Using an Etalon with a Nematic Liquid Crystal Layer and its Response Speed
Authors:Kumagai, T.; Ito, R.; Takeya, K.; Yoshida, H.; Kubo, H.; Fujii, A.; Nose, T.; Tonouchi, M.; Ozaki, M.
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Abstract: We demonstrate a tunable terahertz (THz) filter using an etalon with a nematic liquid crystal (NLC) layer. The etalon is composed of water-free fused silica glass plates and air layers, and contains a 75 mu m-thick defect layer filled with homeotropically-aligned NLCs. Frequency tuning of the transmission peak is achieved by applying an in-plane electric field across the NLC layer: the transmission peak shifts from 1.025 THz to 1.013 THz. The obtained rise and decay times are 5.3 s and 12.2 s respectively and found to be 10 times faster than previous THz. LC devices because of the thin NLC layer.
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