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Title:Giant Faraday and Kerr rotation with strained graphene
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Abstract:Polarized electromagnetic waves passing through (reflected from) a dielectric medium parallel to a magnetic field undergo Faraday (Kerr) rotation of their polarization. Recently, Faraday rotation angles as much as 0.1 rod were observed for terahertz waves propagating through graphene over a SiC substrate. We show that the same effect is observable with the magnetic field replaced by an in-plane strain field which induces a pseudomagnetic field in graphene. With two such sheets a rotation of π/4 can be achieved, which is the required rotation for an optical diode. Similarly a Kerr rotation of 1/4 rod is predicted from a single reflection from a strained graphene sheet.
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Inspec controlled terms:electromagnetic wave polarisation - Faraday effect - graphene - optical Kerr effect - optical materials - optical rotation - silicon compounds - terahertz wave spectra
Uncontrolled terms:giant Faraday rotation - Kerr rotation - strained graphene sheet - polarized electromagnetic waves - dielectric medium - Faraday rotation angles - terahertz waves propagation - SiC substrate - in-plane strain field - pseudomagnetic field - optical diode - C - SiC
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