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Title:Broadband microwave and time-domain terahertz spectroscopy of chemical vapor deposition grown graphene
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Abstract:We report a study of the complex AC impedance of chemical vapor deposition grown graphene. We measure the explicit frequency dependence of the complex impedance and conductance over the microwave and terahertz range of frequencies using our recently developed broadband microwave Corbino and time domain terahertz spectrometers (TDTS). We demonstrate how one may resolve a number of technical difficulties in measuring the intrinsic impedance of the graphene layer that this frequency range presents, such as distinguishing contributions to the impedance from the substrate. From our microwave measurements, the AC impedance has little dependance on temperature and frequency down to liquid helium temperatures. The small contribution to the imaginary impedance comes from either a remaining residual contribution from the substrate or a small deviation of the conductance from the Drude form.
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