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Title: Measurement of the Optical Constants of Thin Metal Films by THz Differential Time Domain Spectroscopy

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Abstract: Three kinds of nanometer-scale metal films (Cr, Ni and Ti) with different thicknesses are fabricated. The complex refractive indices of the three metal films are quantitatively measured by using THz differential time-domain spectroscopy (THz-DTDS). The orders of the complex refractive indices of the thin metal films are equal to those of the reported values. Our results validated that THz-DTDS can be used to study the features of the ultra-thin metal films.