Thermo-optical characterization methodologies and thermal properties of graphene-polymer composites: A review

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Reference sample testing

The apparatus was tested on two reference samples.

Sample 1) 200 nm thick Au layer on glass substrate

Sample 2) 200nm thick Ti layer on glass.

These samples were chosen because they are both thin films, and there is a large difference in thermal conductivity between these two materials.

200 nm Au on Glass



Figure S1: Normalized beam deflection profiles for the 200nm Au thin film. Data is taken at three different modulation frequencies. The experimental data (dots) is used to fit the theoretical curves to ultimately determine the thermal conductivity of the thin film. We find that $k_{film} \sim 275 \pm 30$ W/m K, literature value = 310 W/m K

200 nm Ti on Glass



Figure S2: Normalized beam deflection profile for the 200nm Ti thin film. The data was similarly fit as in Fig S1. We find that $k_{film} \sim 18\pm5$ W/m K, literature value = 19-23 W/m K

Both reference samples gave reasonably comparable results to the known thermal conductivity values of Au and Ti.