

Abstract Submitted  
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**Measuring graphene's thermal coefficient of expansion with bimetallic cantilevers** HIRAM CONLEY, Vanderbilt University, NICKOLAY LAVRIK, CNMS Oak Ridge National Lab, DHIRAJ PRASAI, KIRILL I. BOLOTIN, Vanderbilt University — We developed a method for probing the thermal coefficient of expansion of 2D materials by measuring the deflection of a bimetallic cantilever. We fabricate suspended bimetallic cantilevers composed of single-layer or multilayer graphene and either gold or silicon nitride. Because of the mismatch of the thermal expansion coefficients, these cantilevers bend when heated. We employ laser interferometry to measure the bending and to extract the thermal expansion coefficient from -170 C to 250 C. We find that this technique provides a reliable measurement of the thermal expansion coefficient for graphene. Through comparison of the coefficient of expansion obtained from our bimetallic cantilevers and that of suspended graphene we demonstrate how graphene's dimensionality is perturbed by contact with other materials.

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