Abstract Submitted
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**Thermal and Thermoelectric Transport across Graphene/BN and Graphene/BN/Graphene Heterostructures** NIRAKAR POUDEL, University of Southern California — We report thermal and thermoelectric transport measurements across graphene/hexagonal boron nitride (h-BN)[1] and graphene/hexagonal boron nitride (h-BN)/graphene[2] heterostructure devices. Using an AC lock-in technique, we are able to separate the thermoelectric contribution to the $I-V$ characteristics of these important device structures. The temperature gradient is measured optically using Raman spectroscopy, which enables us to explore thermoelectric transport produced at material interfaces, across length scales of just 1-2 nm. A temperature drop of 60 K can be achieved across this junction at high electrical powers (14 mW). Based on the temperature difference and the applied power data, we determine the thermal interface conductance of this junction to be 7.4 x$10^6$ W/m$^2$·K, which is below the $10^7$-$10^8$ W/m$^2$·K values previously reported for graphene/$SiO_2$ interface. Based on the observed thermoelectric voltage ($\Delta V$) and temperature gradient ($\Delta T$), a Seebeck coefficient of 99.3 $\mu$ V/K is ascertained for the heterostructure device.

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