

Study of Electrical Properties of Nanoparticle-Decorated Graphene Devices

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Degree: Ph.D., December 2021

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Microelectronic Materials & Devices

Nanoscale Materials & Devices

Background/Relevance

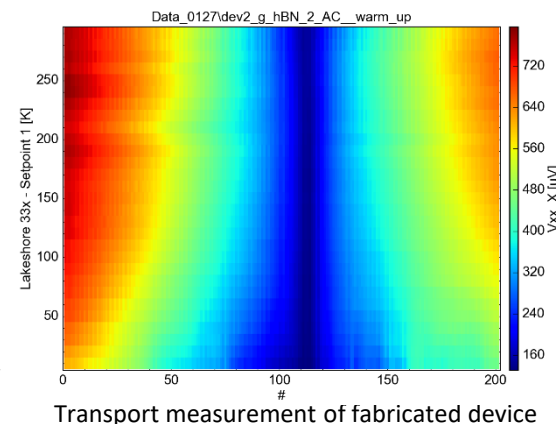
- Demand for cleaner and more sustainable form of energy is driving research towards alternative energy sources and carrier.
- Hydrogen is one of the promising alternative energy carrier.
- Hydrogen is colorless, odorless, and has high tendency of leakage. Hence there is need for development of hydrogen gas sensors that meet DoE requirements.

Innovation

- Find correlation between hydrogen sensor parameters for synthesized nanoparticle decorated graphene and electron transport measurements.

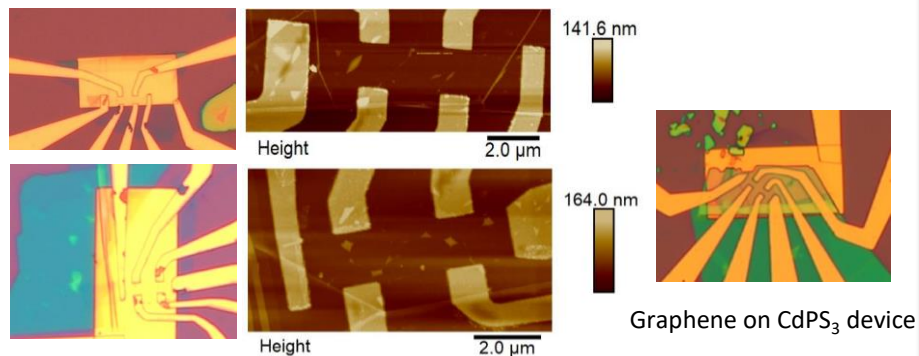
Approach

- Graphene device done through mechanical exfoliation and e-beam lithography.
- Hall measurement carried for the longitudinal and hall resistance of the device to extract carrier density and carrier mobility



Key Results

- Device fabrication and electrical characterizations of graphene hall bars on HBN and CdPS₃ as substrates.

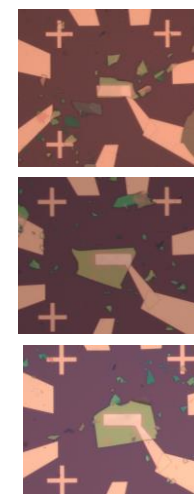


Conclusions

- The electrical properties of the sample when extracted will help will the characterization of nano-particle decorated graphene on future

Future Work

- More electronic transport measurement for fabricated devices
- More AFM analysis of SDS functionalized CVD graphene
- Fabrication of device from Pd/Pt decorated graphene



More fabricated devices

Graphene on HBN devices