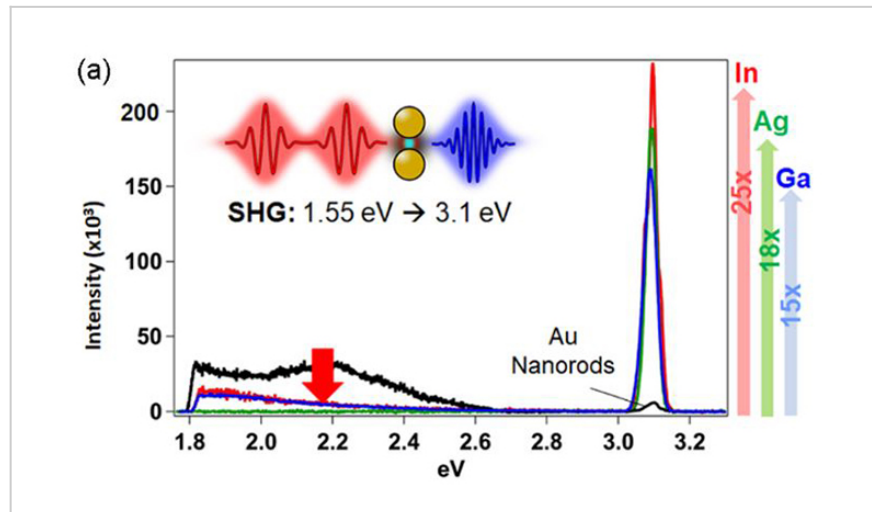


Graphene/2D-Metal Hybrids for Improved Sensor Performance

ID# 2018-4864



SHG of hybrid structures

Technology Summary

The technology is based on creating atomically thin metals by sandwiching the metal atoms between a substrate and graphene. The unique structure of the metal atoms creates a strong plasmon resonance in the visible/near-IR wavelengths and extreme non-linear optical properties that are >2000x better than gold nanoparticles. These materials will enable unprecedented sensitivity and precision in spectroscopic detection of chem/bio molecules. Beyond the optical properties, this technology will enable new forms of plasmonic metasurfaces, plasmon-enhanced catalysis, and even next-generation quantum technologies.

Application & Market Utility

This technology is the active surface of specially engineered “microscope slides” that is proven to boost the spectroscopic signal of viruses and molecules by 100-1000x, enabling rapid and reliable identification of biological and chemical molecules for health, environment, and defense applications.

Next Steps

The researchers are seeking licensing opportunities and research collaboration.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- 2D materials
- biosensor
- chemical sensor
- spectroscopy
- Surface-enhanced Raman spectroscopy

Researchers

Joshua A. Robinson

Associate Professor of Materials Science and Engineering

[Online Bio](#)

Natalie C. Briggs

Graduate Researcher

Kenneth Knappenberger

Professor

[Website](#)

Other Researchers

Tian Zhao

Originating College

College of Earth and Mineral Sciences

Office of Technology Management Contact

Rokita, Joseph
jjr152@psu.edu
814-863-6336