

Production of Substrate-Free Bismuthene Nanoflakes

Track Code: 2019-WU-68444

Categories:

- Electrical Engineering
- Materials and Manufacturing

Keywords:

- 2D Materials
- bismuthene
- Graphene
- Quantum Computation
- quantum electronics
- single layer materials
- Spintronics

Bismuthene is a 2D material similar to graphene that is usually fabricated on a substrate, which limits its application in electronics and quantum computing. This technology is a method of preparing uniform and substrate-free bismuthene. Each bismuthene nanoflake has an equilateral triangle shape with a 10-100 μm side length and an atomic-thin thickness of 3-10 nm. The nanoflakes are highly crystalline, consisting of bismuth atoms arranged in a honeycomb lattice. Applications for bismuthene include in quantum electronic devices for quantum systems.

Advantages:

- Substrate-free
- Uniform shape
- Atomic-thin thickness

Potential Applications:

- Quantum computing
- Spintronic devices
- Electronics

People:

- Wu, Wenzhuo (Project leader)
- Wang, Yixiu

Intellectual Property:

Application Date: November 22, 2019

Type: PCT-Patent
Country of Filing: WO
Patent Number: (None)
Issue Date: (None)

Application Date: November 15, 2019
Type: Utility Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Application Date: December 6, 2018
Type: Provisional-Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475
Fax: (765) 463-3486
Email: otcip@prf.org