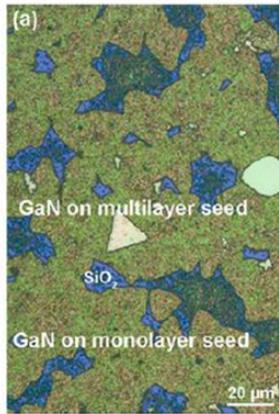


Method of Growing Crystalline Layers on Amorphous Substrates

ID# 2018-4743



GaN films grown on GaSe seed layers

Technology Summary

Methods of producing Group-III chalcogenide (GIIC) seed layers have been developed, allowing for an ultra-thin nanocrystalline Group III nitride layer to form on amorphous substrates such as silicon or silicon dioxide. Effectively, the GIIC materials are used as a precursor to group III-V semiconductors by growing the GIIC materials on a substrate and subsequently treating the material with nitridation and/or exfoliation in order to produce a semiconductor with a band gap of about 1-3 eV.

Application & Market Utility

Chalcogenide semiconductors are important materials for optical applications such as solar cells, thermal imaging, sensors and electrical applications such as LEDs and electrical devices. The present invention is a thin film that acts as a precursor to such semiconductors. This invention provides a more reliable and cost-effective method of synthesizing Group III-V semiconductors. Further, this invention enables high quality GaN synthesis on amorphous substrates such as silica and glass, thereby expanding the functionality of nitride materials and the library of possible growth substrates.

Next Steps

Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL

1-3

Seeking

Investment | Licensing | Research

Keywords

- chalcogenide
- crystalline semiconductor
- group III materials
- nitride layer

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