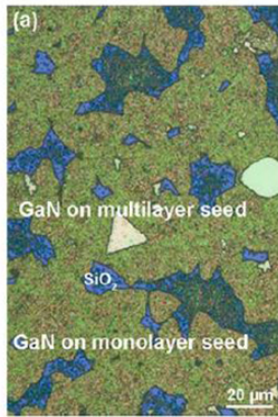


# Method of Growing Crystalline Layers on Amorphous Substrates

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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