

ALUMINIM NITRIDE VACUUM ULTRAVIOLET PHOTODIODE

This invention teaches a method of creating a novel photodiode that will enable a significant improvement in data storage capacity over the Blu-Ray technology. More than 4x the amount of data could be held on a VUV storage disc as compared to a Blu-Ray disc, which could, for example, allow storing multiple movies on one disc.

III-V compound semiconductors have received much recent attention due to their many applications in electronics and optoelectronics, the highest profile application being Blu-Ray technology, which uses a gallium nitride semiconductor. Gallium nitride has a band-gap of 3.4 eV which produces photons in the blue spectrum and blue diodes have found significant commercial applications with new applications being developed all the time. The ultimate development of similar III-V UV diodes would be expected to have similar commercial applications.

This invention teaches thin film doping of aluminum nitride, which then has a larger band-gap than gallium nitride, and goes beyond the state of the art blue diodes by operating in the ultraviolet spectrum. This larger band-gap and shorter spectral range translate into a technology that has more than 4x the data storage capacity of Blu-Ray.

POTENTIAL AREAS OF APPLICATIONS:

- VUV photodiode
- High temperature electronics
- VUV photovoltaic cells for nuclear energy conversion

PATENT STATUS: Non provisional patent application on file

INVENTOR(S): Mark Prelas; Tushar Ghosh; Robert Tompson; Dabir Viswanath; Sudarshan Loyalka

CONTACT INFO: Wayne McDaniel, Ph.D.; McDanielWC@missouri.edu ; 573-884-3302