

Low Temperature Integration of Optoelectronic Device

Disclosure Number

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Technology Summary

The present invention describes the fabrication of solid state energy conversion devices employing indirect bandgap semiconductors and their integration on low temperature substrates. The solid state energy conversion device converts energy between electromagnetic and electrical forms. The solid state energy conversion device is fabricated using indirect bandgap semiconductors. The low temperature, low thermal budget dopant activation is carried out by laser or pulse thermal annealing techniques. The dopant activation can be carried out on bulk wafers or chips integrated on low cost substrates by any suitable wafer or chip-bonding techniques. The energy conversion device can be integrated on Si to interface with the CMOS circuitry. The laser or pulse thermal annealing techniques enable the selective creation of the semiconducting, insulating, and conducting regions in the device structure for enhanced functionality.

Inventor

JOSHI, POORAN C

Materials Science and Technology Div

Licensing Contact

DETRANA, ALEXANDER G

UT-Battelle, LLC

Oak Ridge National Laboratory

Rm 139, Bldg 4500N, MS: 6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 576-9682

E-mail: DETRANAAG@ORNL.GOV

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