

**Effects of Nano-sized Interface on the
Electrical Resistances of the P-GaAs Wafer**

Bonding

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Bonding of GaAs wafers has been developed for 2-layer optoelectronic devices. In this study, the electrical characteristics and microstructures of *p*-type (100) GaAs bonded interfaces have been systematically investigated. It was found that GaAs did not bond directly to itself, but via an amorphous oxide layer at 400 °C. When temperatures were greater than 400 °C, the oxide bonded areas decreased and finally disappeared. It was also discovered that the electrical resistance decreased with bonding temperature. The cause of high resistance was due to the oxide phase existing in the interface according to the result of nano-beam electron energy loss spectroscopy.