

High-efficiency GaAs solar cell on flexible substrate

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In this paper, we report the electrical characteristics of GaAs solar cell on flexible substrate. III-V compound solar cell structure was grown on <100> oriented GaAs substrates by molecular beam epitaxy (MBE). The top electrode of finger type was deposited on thin Ti/Pt/Au multi-layer by e-beam evaporator. The fabricated GaAs solar cell was bonded GaAs solar cell on polyether-sulfone (PES) substrate using wafer transfer technique. III-V GaAs flexible solar cell was fabricated by chemical mechanical polishing (CMP) technology. Current-voltage (I-V) characteristics were measured by solar cell measurement system at room temperature. The III-V GaAs flexible solar cell has a short-circuit current density of 25mA/cm², an open-circuit voltage of 860mV, a fill factor of 74%, and a conversion efficiency of 15% at one sun, AM1.5.