

Fabrication and characterization of n-AlGaAs/GaAs schottky diode for rectenna device application

Abstract:

Schottky diode was designed and fabricated on n-AlGaAs/GaAs high electron mobility transistor (HEMT) structure for rectenna device application. Rectenna is one of the most potential devices to form the wireless power supply which is really good at converting microwaves to DC. The processing steps used in the fabrication of Schottky diode were the conventional steps used in standard GaAs processing. Current-voltage (I-V) measurements showed that the device had rectifying properties with a barrier height of 0.5468 eV for Ni/Au metallization. The fabricated Schottky diode detected RF signals and the cut-off frequency up to 20 GHz was estimated in direct injection experiments. These preliminary results will provide a breakthrough for the direct integration with antenna towards realization of rectenna device application.