Reactive ion etching GaAs and AlAs: Kinetics and process monitoring

Gerhard Franz and Charlotte Hoyler
Siemens Research Laboratories, D-81730 Munich, Germany

Josef Kaindl
Fachhochschule München, D-80335 Munich, Germany

(Received 5 August 1995; accepted 22 November 1995)

The BCl_3/(Ar,He) etching process for AlGaAs layers is described and analyzed. It was thoroughly investigated whether the mechanism of plasma etching could be evaluated using the loading effect. Very smooth sidewalls of the structures were obtained with using an optimized process to treat the photoresist after its development. It is shown that various end point detection methods can complement each other and enable etch depth monitoring with a depth resolution of significantly better than 50 nm at a total depth of more than 2.5 μm.