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INVITED: "Bipolar Transistors made by
Ion Implantation"

by

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ABSTRACT

Ion implantation is rapidly becoming an important processing step in the fabrication of bipolar silicon devices. This has occurred as a result of the understanding of the role of the damage produced by the high implanted doses required to produce the emitter. All-ion implanted transistors, using arsenic for the emitter and boron for the both the intrinsic and extrinsic bases have been fabricated with excellent and extremely uniform distributions of electrical characteristics. Independent control of both the gain, frequency response and emitter-base breakdown voltage is obtained in discrete transistors as well as integrated circuits. Other areas of application of ion implantation to bipolar devices that are being used to advantage are in the fabrication of resistors, J-FETs and buried layers. This talk will cover the role of ion implanted damage in influencing the properties of bipolar devices as well as specific applications and results obtained on discrete devices.

