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Molecular Beam Epitaxy -
An Emerging Epitaxy Technology

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Demands of the microwave and electro-optical industries for progressively thinner planar epitaxial structures have stimulated intensive research into the crystal growth technique of Molecular Beam Epitaxy, MBE. As a result of these efforts, MBE has developed to the extent where control over host lattice and dopant material proviles on an atomic scale in the direction of growth is possible. This extreme geometric and chemical control is presently being applied to practical semiconductor device structures as well as to development and study of totally new materials. The MBE process and its implementation will be described. Examples of the devices and materials grown by MBE which have demonstrated its feasibility, and practicality, and which have proven to be strong and exciting stimuli for further research and development will be described. In particular, the successful application of MBE to low noise microwave mesfet and mixer diode fabrication will be highlighted.