Recent Development in E-Beam Lithography techniques

Abstract:

In the fabrication of Integrated circuits, Lithography plays a major role in patterning the exact and specific shapes on the semiconductor substrates. As we know that the growing requirement in present trends of IC technology urges in the decrement of sizes and increment of complexity of the devices. Limits have been reached in the techniques of Mask making, optical projection, contact printing etc. To overcome these limitations, Electron Beam Lithography is one of the better options available for printing the patterns.

In E-beam lithography, custom pattern printing is carried out by the exposure of electrons using electron sensitive film on the substrate. This maskless lithography technique helps in achieving high resolution, low throughput and damage free patterns. Controlled and selective exposure on the required regions of the semiconductor substrate helps in gaining small feature sizes. E-beam has its wide application in areas of nano lithography.

This paper explains the recent developments and changes in the process of E-beam lithography and its impacts in the fabrication process.

References

1. D. R. Herriott ; R. J. Collier ; D. S. Alles ; J. W. Stafford EBES, a practical electron lithographic system

2. Tseng, A.A., Chen, K., Chen, C.D., Ma, K.J.: Electron beam lithography in nanoscale fabrication: recent development. IEEE Trans. Electron. Packag. Manuf. **26**(2), 141–149 (2003)

3. Herriott, D.R., Brewer, G.R.: Electron-beam lithography machines, Chapter 3. In: Brewer G.R. (ed.) Electron-Beam Technology in Microelectronic Fabrication, pp. 141–216. Academic, New York (1980).

4. Jack J.H. Chen Faruk Krecinic, Jen-Hom Chen, Raymond P.S. Chen, and Burn J. Lin : Future Electron-Beam Lithography and its Implications on Design and CAD Tools, VLSI-TSA (2011)P.96

By,

Preetham Ganesh Kamisetty

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