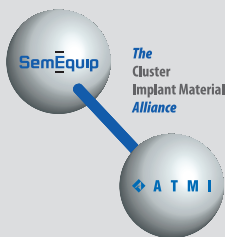


Process Benefits:

- ▶ Simplifies Source Drain Extension Formation Process
- ▶ Further Enhances the ClusterBoron® Self-Amorphization Advantage
- ▶ Inhibits Dopant Diffusion
- ▶ Enables Shallowest Junction Formation
- ▶ Produces Extremely Abrupt Junctions
- ▶ Provides High Dopant Activation/ Low Sheet Resistance
- ▶ Extends the Application Life of Spike Anneal Technology
- ▶ Distributed by ATMI



SemEquip

The Cluster Implant Source

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ClusterCarbon™ Implant Material

Introducing...

A Molecular Carbon Implant Material For Advanced Source Drain Extensions

Processes for advanced Source Drain Extension (SDE) formation are becoming increasingly complex. Aggressive requirements for junction depth, sheet resistance, and abruptness are difficult to satisfy with conventional technologies. The fundamental issues are the low productivity of low energy monomer implantation systems and the high diffusion of Boron in Silicon at the temperatures needed for activation.

SemEquip's new ClusterCarbon™ Implant Material combined with ClusterBoron® Implant Material is self-amorphizing, resulting in the shallowest junctions and the elimination of the Germanium PAI.

ClusterCarbon™ inhibits dopant diffusion, resulting in the most abrupt junctions. In addition, ClusterCarbon™ extends the application life of conventional spike anneal processes.

SemEquip's ClusterIon® Source System provides up to 10x throughput gains compared to existing monomer ion implant platforms. ClusterCarbon™ and ClusterBoron® produce higher dopant activation, lower sheet resistance, and the most abrupt junctions.

ClusterCarbon™ used in conjunction with ClusterBoron® enables *the* new process solution for 65nm, 45nm, and 32nm Source/Drain Extension.

To learn more about SemEquip's innovative ClusterIon® implant technology, contact ATMI and your ion implant equipment provider.

