

Cluster Ion™ Ion Source

—The Future of Implantation—

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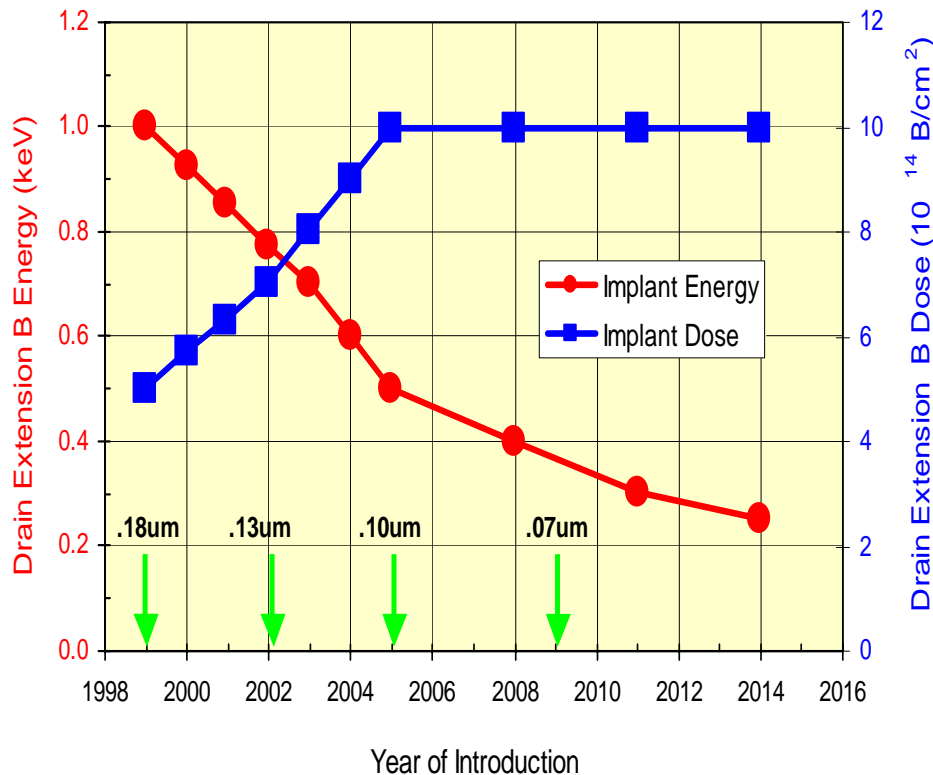
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The Problem—Beam Current Limit



Implant Technology Trends:

↓ Decreasing Energy

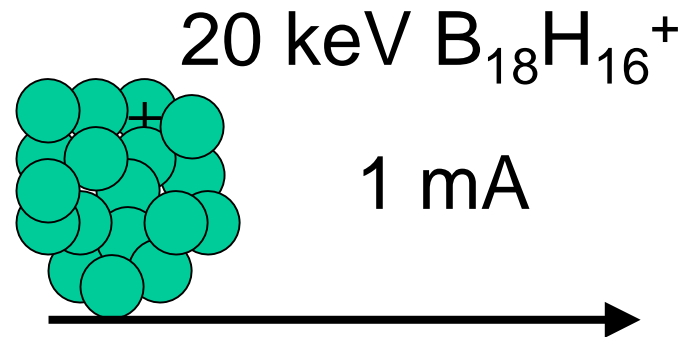
↑ Increasing Dose

Quickly reaching Physical limit in deliverable current

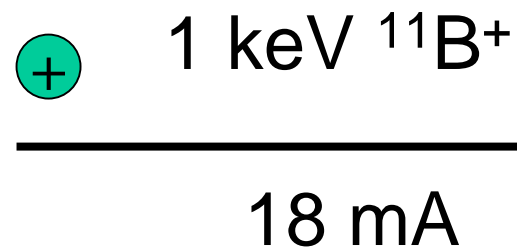
→ Current implantation methods will no longer be cost-effective!

The Solution: Cluster Implant

- 18 dopant atoms per cluster
- Extract and transport at 20x higher energy
- Increase dose rate by 18x while reducing charging
- Enables Cost-effective Low Energy Implantation

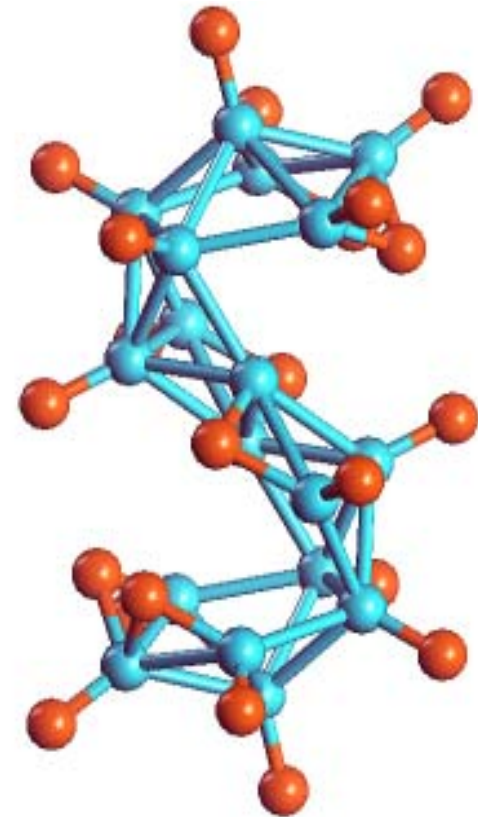


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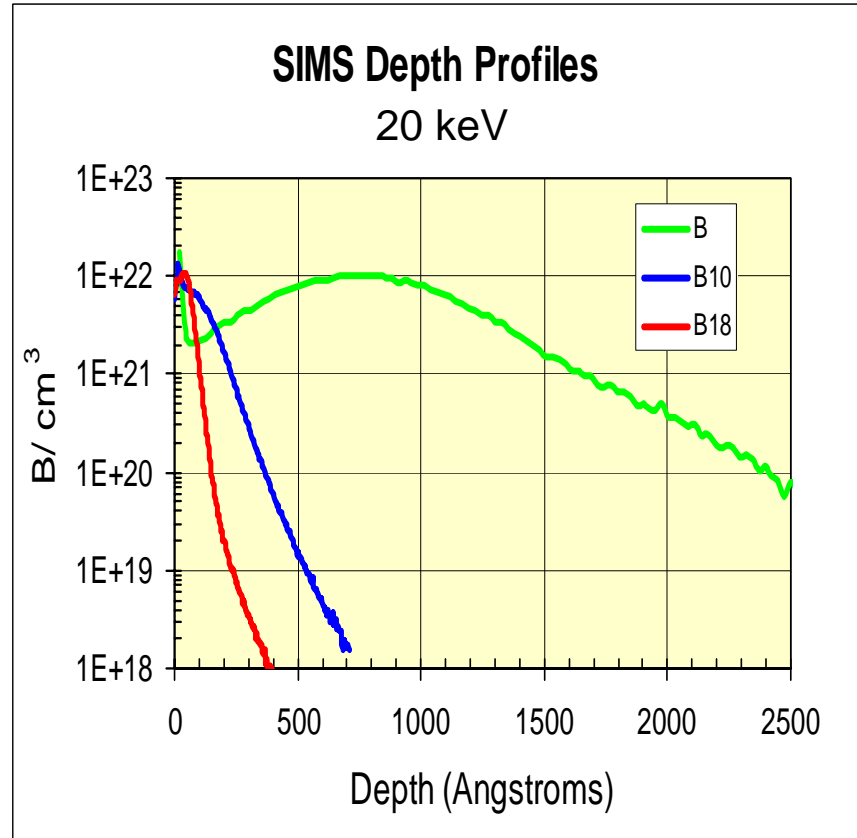
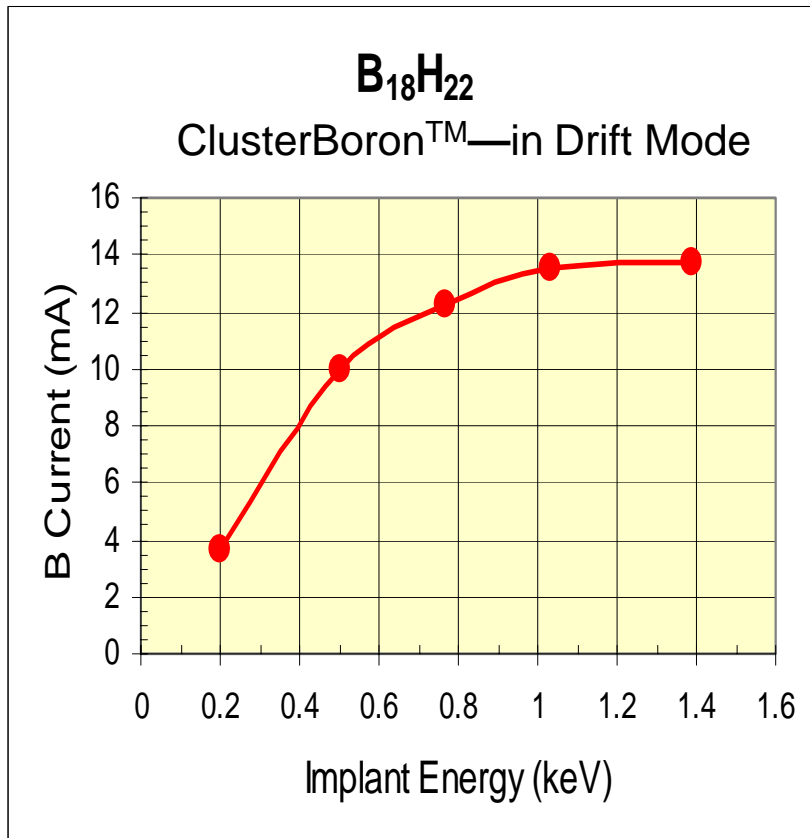


The ClusterIon™ Source

- Electron Impact Ionization Source
- Preferentially produces clusters
- Both N- and P-type clusters are produced
- ClusterBoron™
 - $B_{18}H_{22}$
 - 18X Beam Current
 - 20X Energy



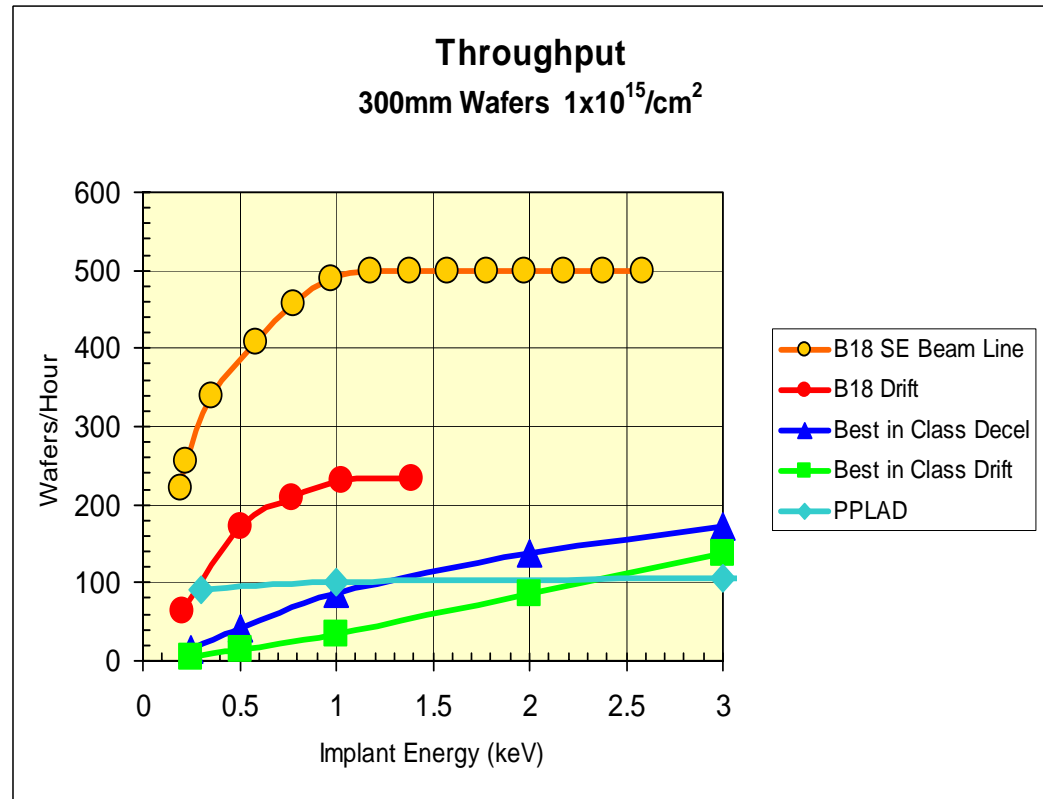
ClusterIon™ Source Performance



Throughput Comparison

Source/Drain Extension Implant

- Provides higher throughput than any available implant technology, including Plasma Doping!
- Source/Drain Extensions are implanted at Mechanical Limit for 300 mm wafers.



Please Contact SemEquip...

We seek **Corporate Partners** to help bring our technology to market:

- Investors
- Capital Equipment OEM's
- Chip Makers

We are currently developing custom OEM products and implant processes, and issuing licenses to our technology.