ClusterIon® Source for Cluster Implantation

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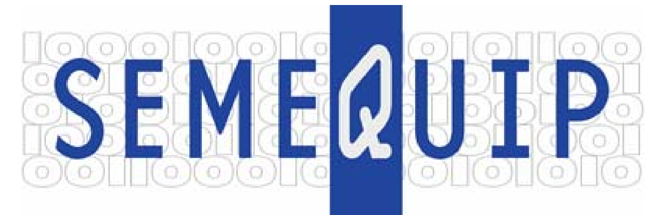
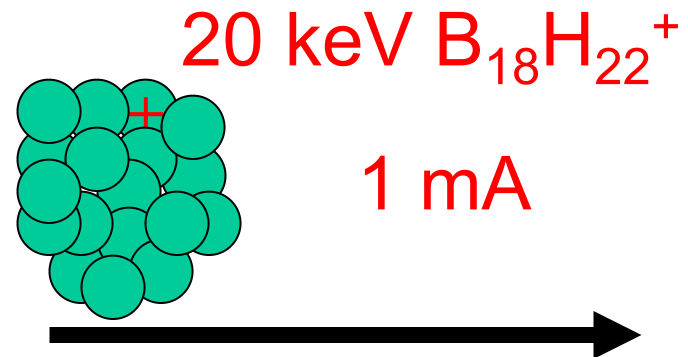


Why Clusters Are The Solution for High Dose, Low-Energy Implants

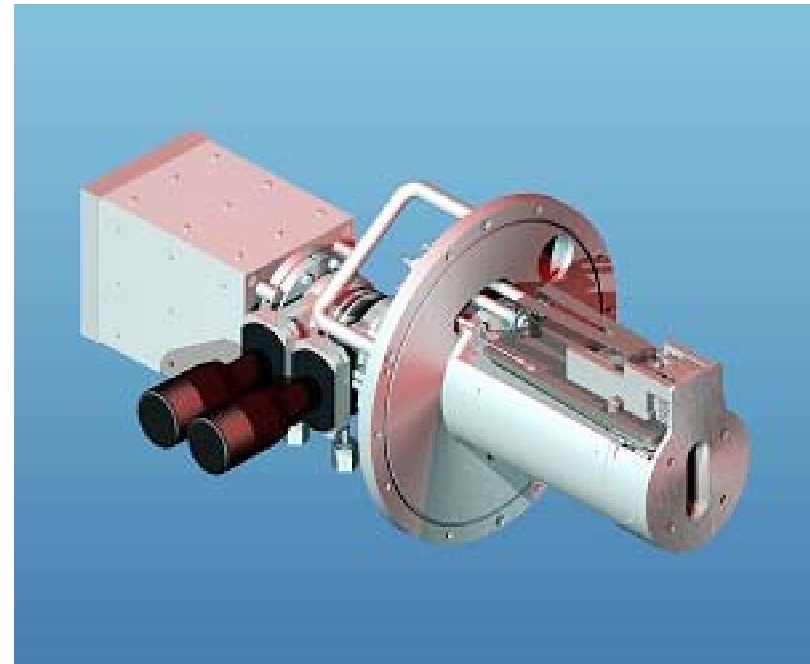
- 18 dopant atoms per cluster
- Extract and transport at 20X higher energy
- Increase dose rate by 18X
- Reduces Charging
- No deceleration needed—eliminates energy contamination



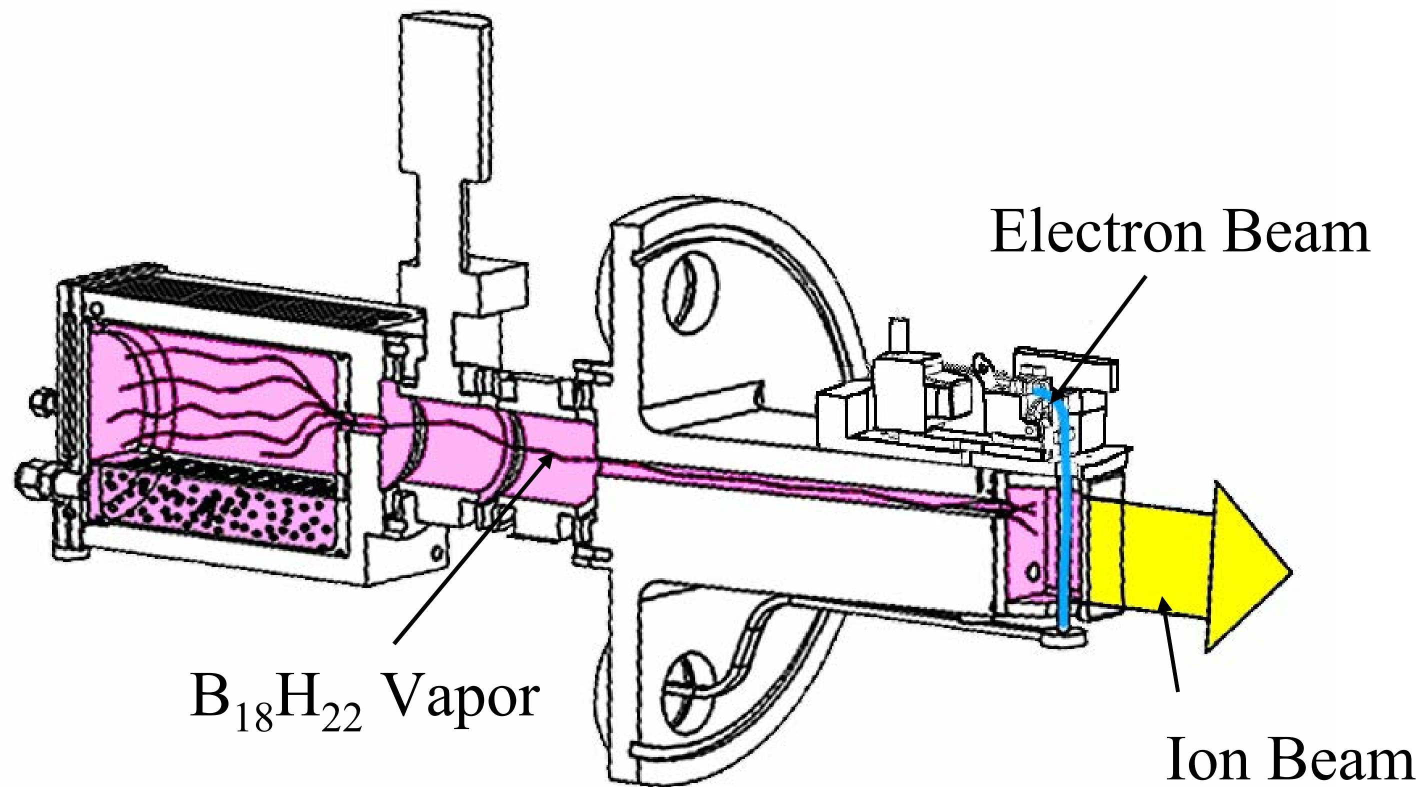
is equivalent to

ClusterIon® Source & Vaporizer

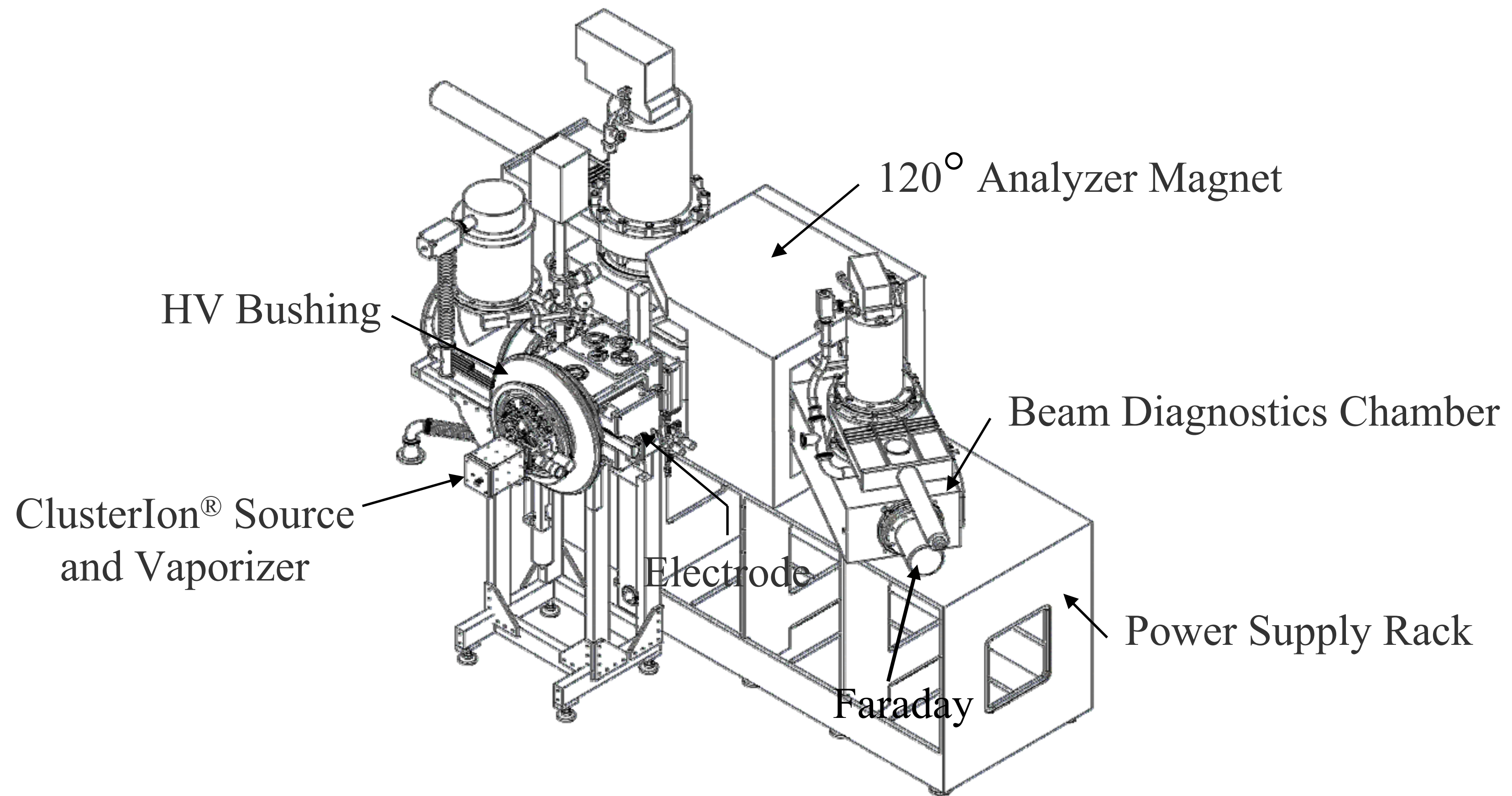
- Small Footprint
- Low Maintenance Cost
- 100 Hour Service Interval
- Retrofitable to
  - Medium Current Tools
  - High Current Tools



Source Assembly Cross Section



SemEquip Test Stand



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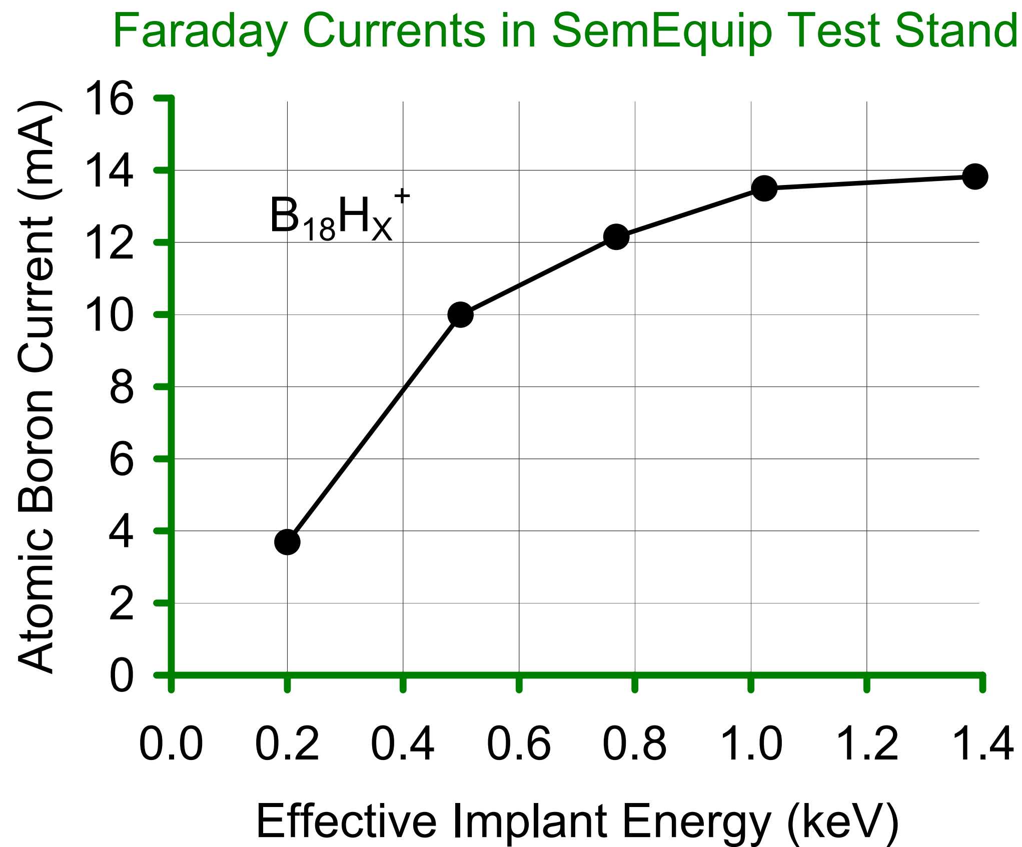
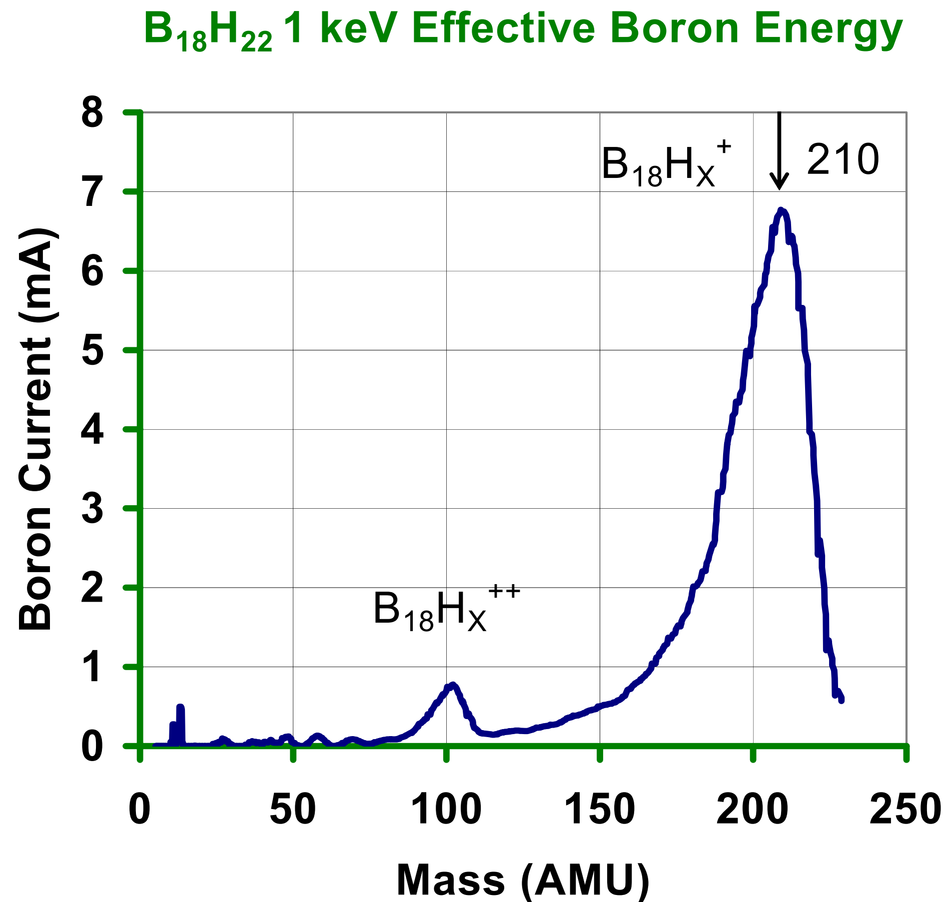
ClusterBoron™ Current vs. Effective Implant Energy



ClusterIon® Source Retrofitted into a GSD100 Implanter: 1 keV Boron



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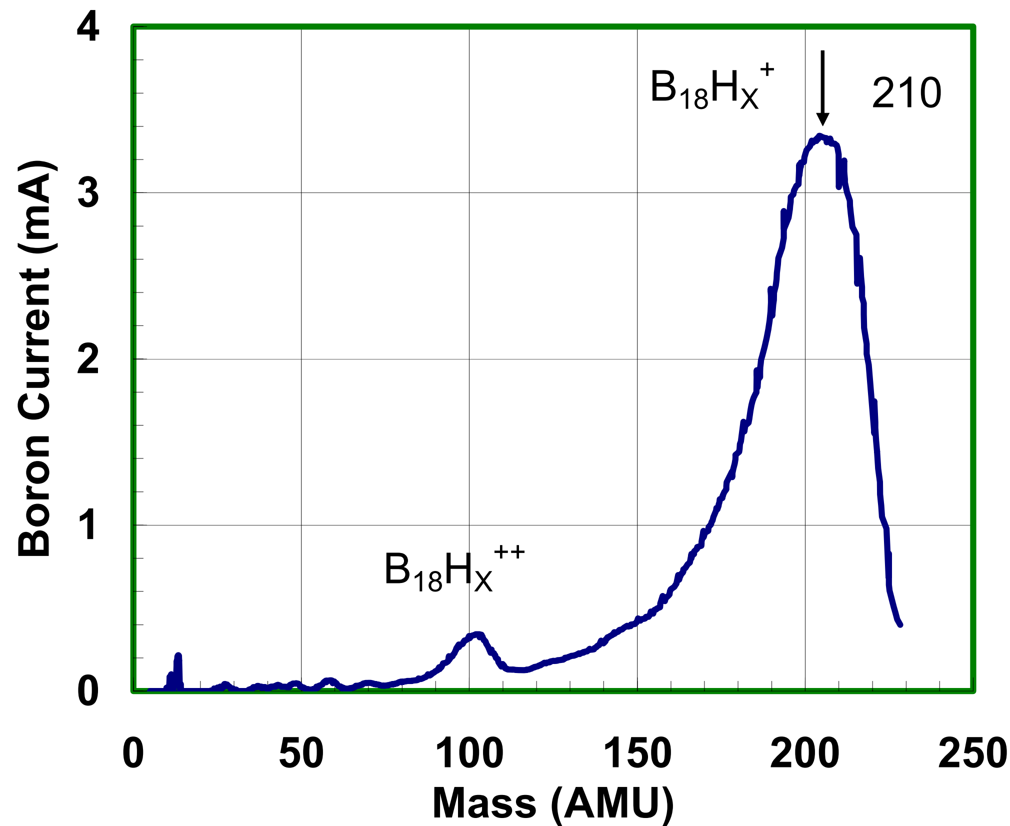
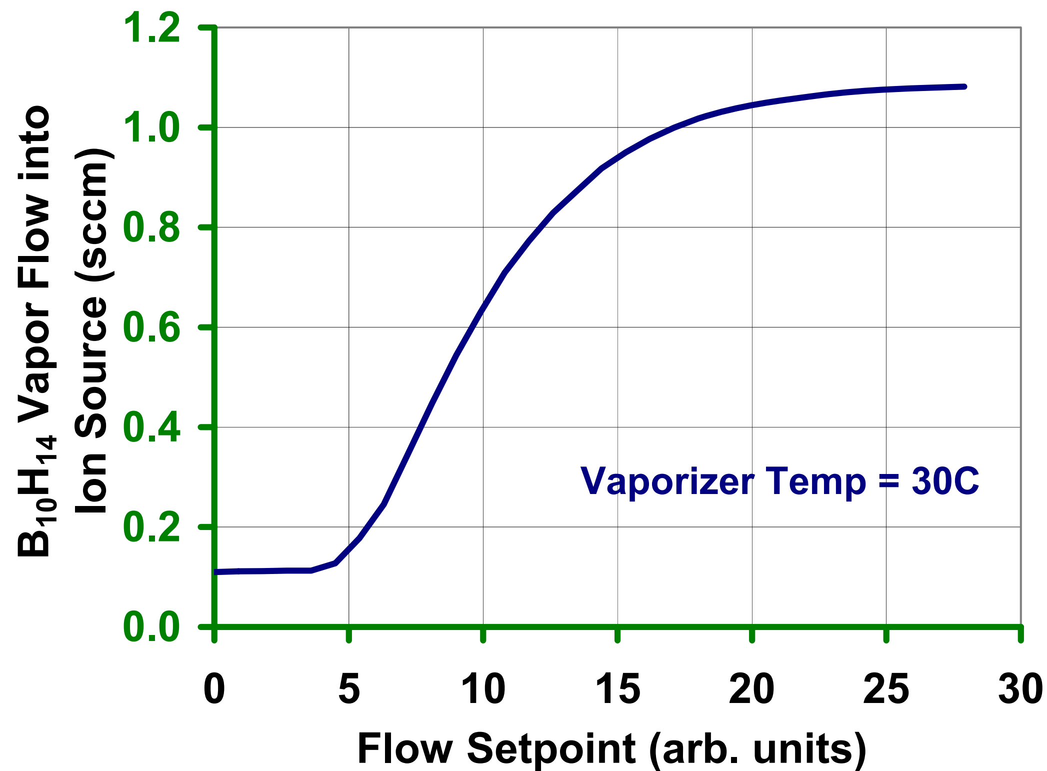
ClusterIon® Source Retrofitted into a GSD100 Implanter: 500 eV Boron



Vapor Delivery System

- Regulates vapor flow to ± 0.2%
- Fully programmable from 20C to 150C
- 3-zone temperature control ensures >95% material usage
- Single charge lasts for 200 hrs
- Demountable without venting vaporizer or ion source

Vapor Flow Dynamic Range



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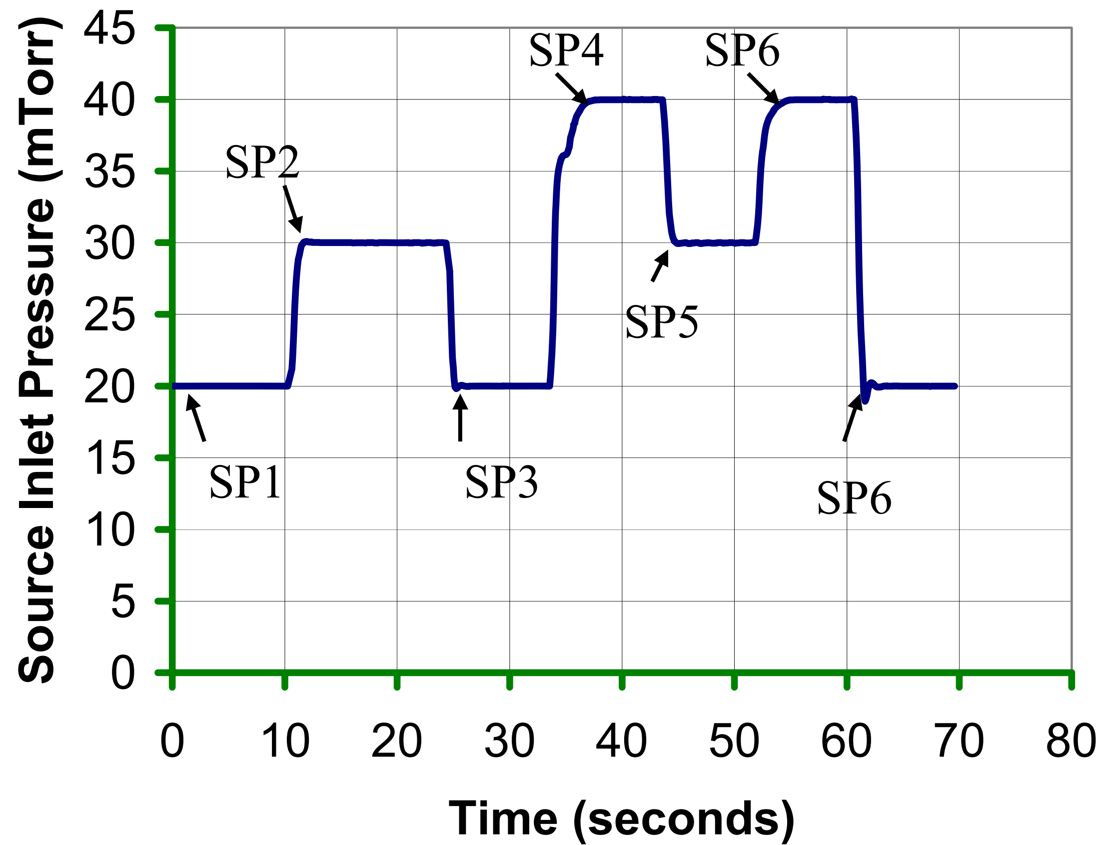
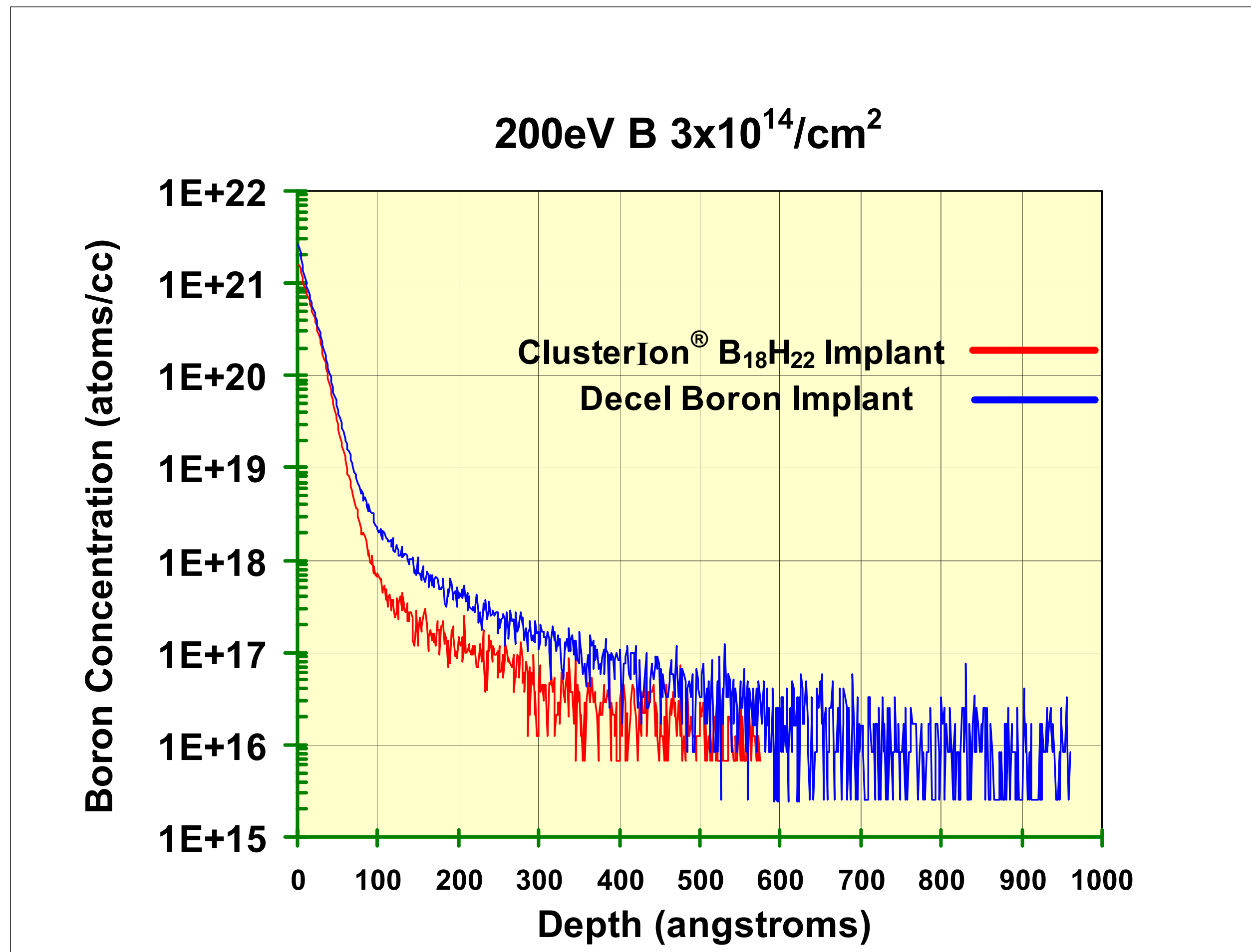
Vapor Flow Step Response



SIMS Profile Comparison—B_{18} vs B

Cluster Beam Yields 35% Shallower Implant



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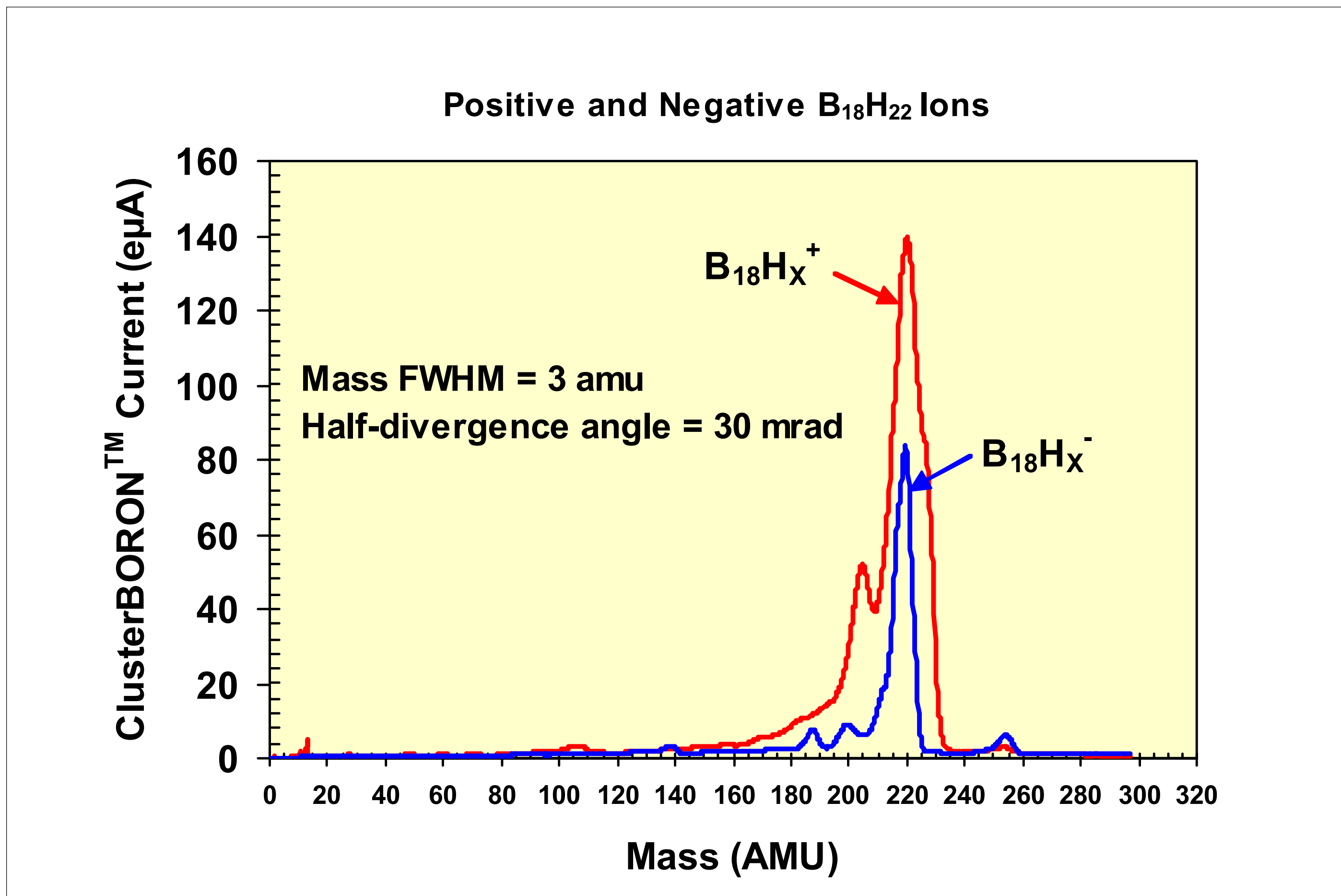
Positive and Negative Ion Spectra



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