



Update on Implant Dopant Materials

Greater Silicon Valley Implant User Group

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Semicon West

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New SDS® Gas Source Dopants

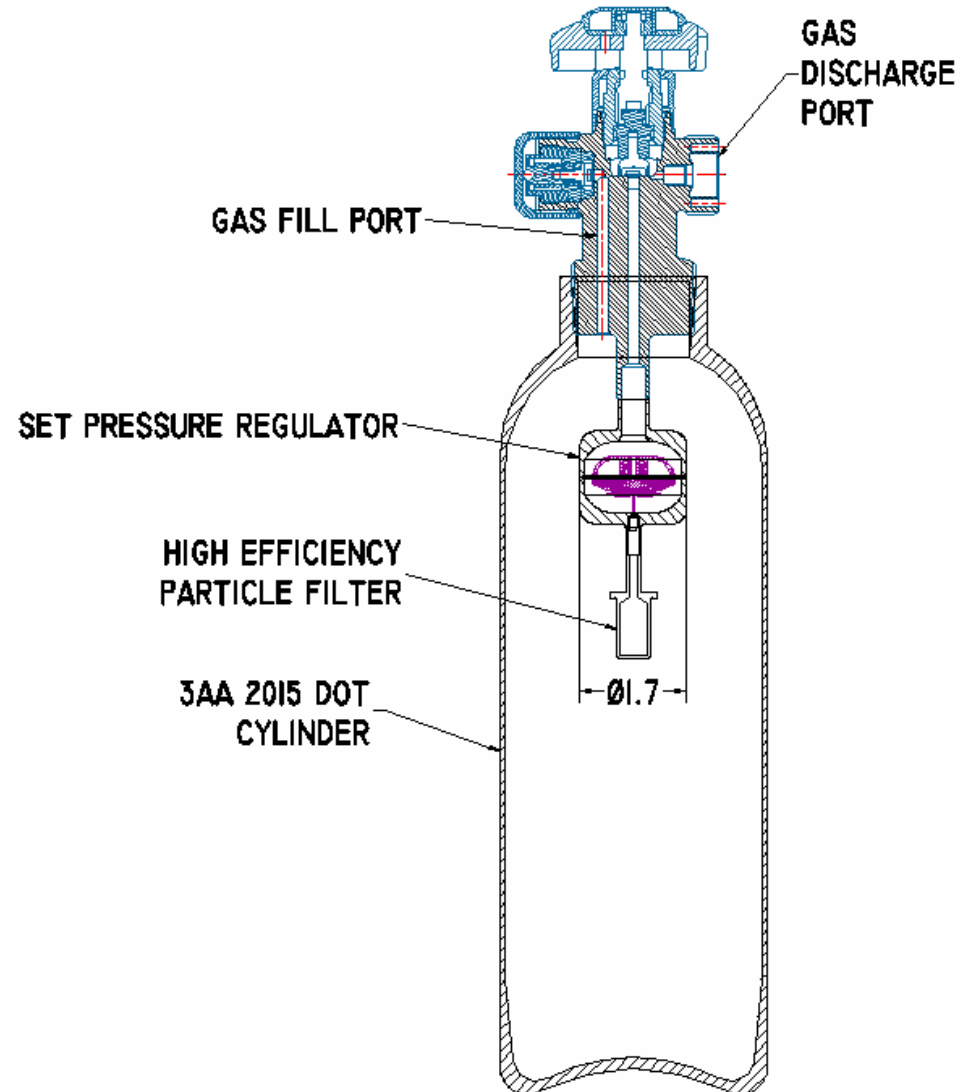
- ◆ Commercialized in January 2002
- ◆ Response to specific customer/OEM requests
- ◆ Currently used in niche applications

- ◆ Arsenic Pentafluoride AsF_5
- ◆ Phosphorus Trifluoride PF_3
- ◆ **Hydrogen Selenide H_2Se**

Note: Other compounds can be adsorbed to create additional SDS dopants. Please inquire with ATMI



VAC™ Gas Source Package



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New VAC™ Package Sources

- ◆ Boron trifluoride
- ◆ Iso-enriched boron trifluoride
- ◆ Iso-enriched germanium tetrafluoride for PAI
 - > 50% enrichment of Ge72
 - 2x beam current capability
 - contamination isolation
 - * extended ion source life
 - * significant throughput increase
- ◆ Carbon monoxide
 - possible source for carbon doped silicon

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Update on New Antimony Source

- ◆ **Dibromomethylstibine (DBMS)**
 - volatile solid delivered from the gas box
 - fully heated delivery system (40 - 60C)
 - significantly increased deliverables
- ◆ **Initial testing**
 - 7 – 9 ma (continued testing at Innovion)
 - start up of full field test at a Texas fab
 - expect results for report at IIT2002

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Update on New Indium Source

- ◆ **Dimethyl Indium (hfac)**
 - **volatile solid delivered from the gas box**
 - **fully heated delivery system (40 – 60C)**
 - **significantly increased deliverables**
- ◆ **Initial testing**
 - **8 –10 ma, 1ma In ++**
 - **continued testing with OEM**

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Update on Decaborane

- ◆ Volatile solid delivered from the gas box
- ◆ Fully heated delivery system (40 – 60C)
- ◆ Vehicle to achieve USJ's
- ◆ Requires non-conventional ion source
- ◆ Proof of principle demonstrated in 2000
- ◆ Currently working with Japanese OEM

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Implant Summary

- ◆ **Innovative, risk reducing packages for ion implant source materials.**
- ◆ **Innovative materials for more efficient implant processes.**
- ◆ **Point of use abatement available as a passive, dry resin abatement package
ZIP - zero impact process**

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