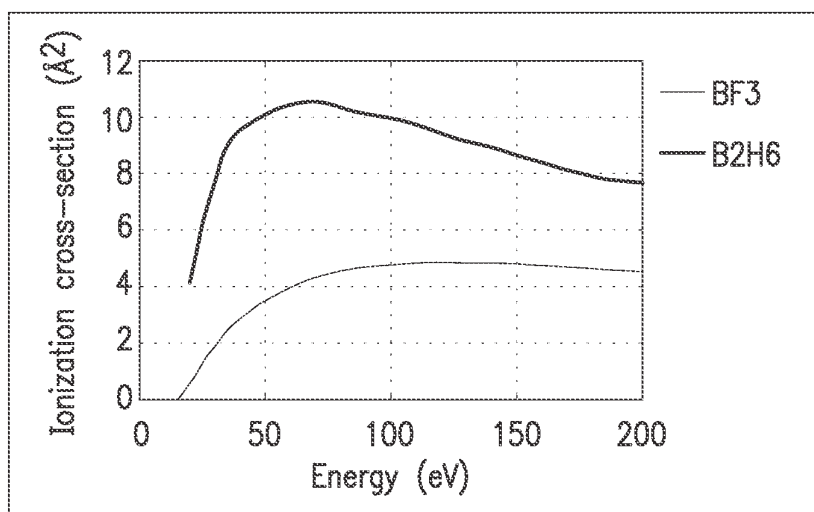


Table 1: Cathode and anode weight gain/loss summary

| Dopant Gas Composition                                                        | Cathode weight gain/loss rate | Anode weight gain/loss rate |
|-------------------------------------------------------------------------------|-------------------------------|-----------------------------|
| $^{11}\text{BF}_3$ only                                                       | +28.5 mg/hr                   | —                           |
| $^{11}\text{BF}_3$ + Xe/H <sub>2</sub>                                        | +1.43 mg/hr                   | −0.75 mg/hr                 |
| 97.5% $^{11}\text{BF}_3$ + 2.5% B <sub>2</sub> H <sub>6</sub>                 | +0.3 mg/hr                    | −5.1 mg/hr                  |
| 90% $^{11}\text{BF}_3$ + 5% B <sub>2</sub> H <sub>6</sub> + 5% H <sub>2</sub> | −2.5 mg/hr                    | −1.1 mg/hr                  |
| 92% $^{11}\text{BF}_3$ + 3% B <sub>2</sub> H <sub>6</sub> + 5% H <sub>2</sub> | −0.6 mg/hr                    | −0.9 mg/hr                  |

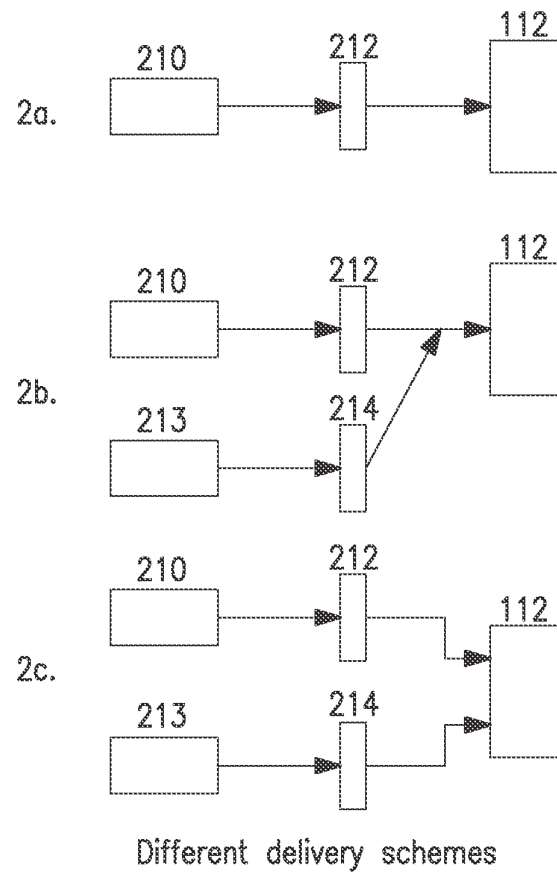
2/6



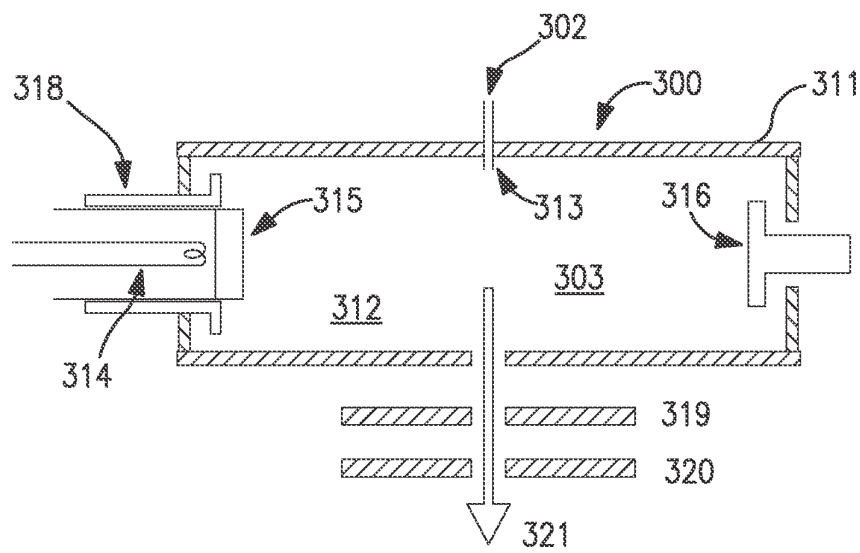
Ionization cross-section for B2H6 and BF3 at different energy levels

**FIG. 1**

3/6

**FIG. 2**

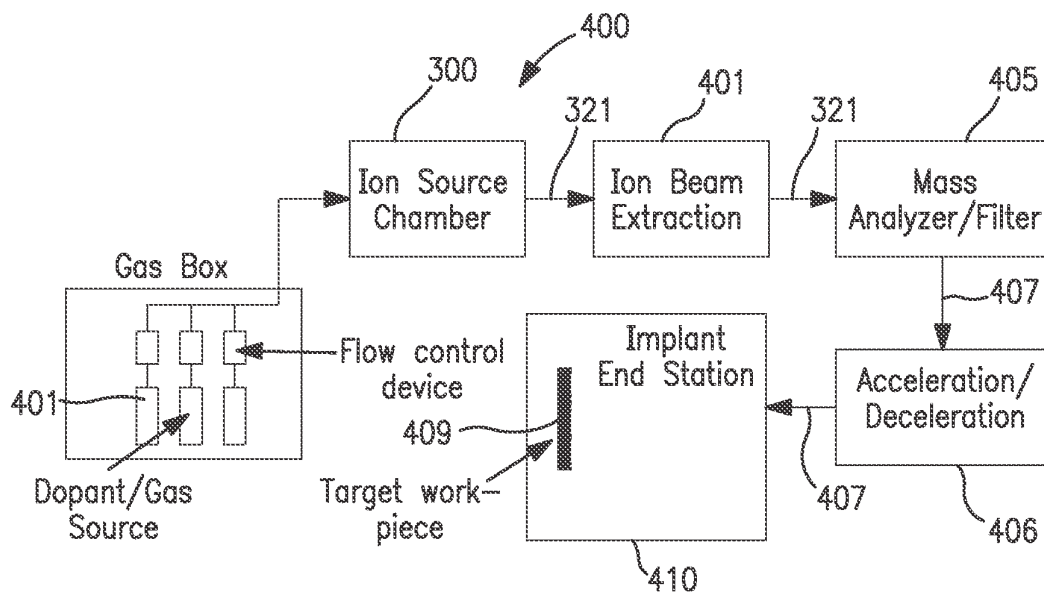
4/6



Schematic of an IHC type ion source

**FIG. 3**

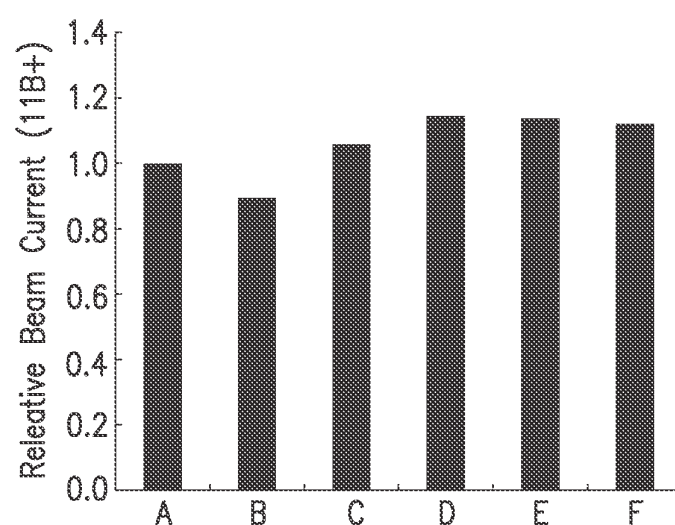
5/6



Schematic of an ion implant system

**FIG. 4**

6/6



Relative beam current for different gas mix composition. A: 100%  $^{11}\text{BF}_3$ ; B: 2.25% Xe/12.75%  $\text{H}_2$ /85%  $^{11}\text{BF}_3$ ; C: 2.5%  $\text{B}_2\text{H}_6$ /97.5%  $\text{BF}_3$ ; D: 5%  $\text{B}_2\text{H}_6$ /95%  $^{11}\text{BF}_3$ ; E: 5%  $\text{B}_2\text{H}_6$ /5%  $\text{H}_2$ /90%  $^{11}\text{BF}_3$ ; F: 3%  $\text{B}_2\text{H}_6$ /5%  $\text{H}_2$ /92%  $^{11}\text{BF}_3$

**FIG. 5**