

# NH<sub>3</sub> MBE for Nitrides



## High Throughput NH<sub>3</sub> Injectors

Specially designed injectors are used for delivering ammonia flux in today's advanced nitride research applications. Injectors may be connected to either a SVT Associates high purity gas manifold or one supplied by the user. Models are available to connect up to three separate gas nozzles, each with an independent heater and thermocouple. Excellent nitride properties have been demonstrated using this injector, including very high GaN and HEMT mobility, and electron stimulated InGaN emission. Model #GI-RF1, shown on the left, is constructed for high throughput, with a RF heated corrosion resistant shower head plate for pre-cracking the ammonia. Its advanced features include:

- High pressure operation design
- Excellent uniformity with 3" or larger wafer with shower head aperture
- Stable temperature cracking up to 1,000 °C
- High throughput gas flow



## Effusion Sources Specially Designed For NH<sub>3</sub> Environment

SVT Associates offers a wide range of effusion cells specifically designed for ammonia based nitride deposition. The Viking Effusion Cell utilizes a fully encased filament and a revolutionary shaped crucible for cell reliability and high performance deposition in an ammonia environment. Also offered is a Cold-Lip Effusion Cell for aluminum deposition. The proprietary source design creates a larger temperature gradient along the length of the source to reduce aluminum nitrideation on the source and improves material quality.



## Substrate Heaters For High NH<sub>3</sub> Pressures

Model #NH-series substrate heaters use a proprietary heating filament material which has been shown to withstand NH<sub>3</sub> pressures up to several torr and temperatures up to 1,200 °C. The heat shields and electrical contacts are similarly treated for high pressure, high temperature operation. Uniformity is guaranteed ± 1% over 4" (101 mm).

