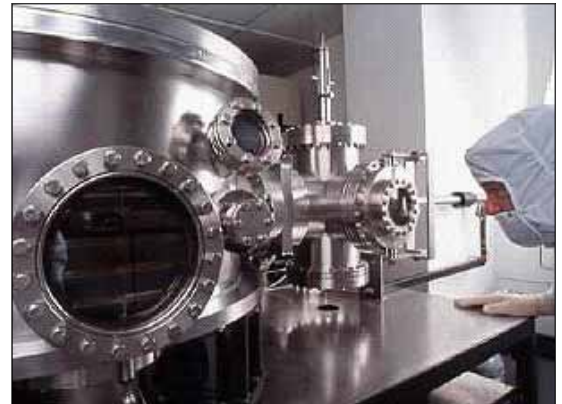


STAR Cryoelectronics is a leading manufacturer of advanced magnetic sensors based on low temperature superconductor (LTS) and high temperature superconductor (HTS) thin films. STARCryo's robust Nb/Al-AlO_x/Nb trilayer Josephson junction process is optimized specifically for the fabrication of Superconducting QUantum Interference Device (SQUID) sensors and is the only commercial LTS SQUID foundry for 150-mm wafers currently available.



STARCryo offers foundry services for the fabrication of low-T_c Josephson junction and dc SQUIDs, as well as custom thin-film microfabrication services. The Josephson junction process is based on a standard critical current density of 100 A/cm². Shunt resistors are made using Pd thin films, ensuring proper operation at all temperatures. The standard sheet resistance is 1 Ω/□. Other critical current densities and sheet resistances are available upon request.



Design data may be submitted to STARCryo in GDSII, CIF, XIC, and KIC formats. Please contact STAR Cryoelectronics for process specifications and pricing.

FEATURES:

Robust Nb/Al-AlO_x/Nb Josephson junction trilayer process for up to 150 mm wafers.

Pd or AuPd resistors.

SiO₂ and Si₃N₄ dielectrics.

Standard 100 A/cm², 1 Ω/□ process.



FACILITIES

Photolithography

- **Brewer Science Model 100 Spin Coater**
Auto-dispense primer and up to three resists
- **Tek-Vac PRC-2000 Photoresist Cure Station**
- **Fusion Semiconductor M150-PC**
Photo resist UV cure station
- **AB-M Mask Aligner**
Expose and pattern wafers up to 150 mm diameter
Backside IR illumination and alignment
Sub-micron resolution, <0.5 μm alignment accuracy (front side)

Thin-Film Deposition

- **Extensive Materials Capabilities**
Nb, Al, Mo, Ti, Ta, Hf, Zr, W, Au, Ag, Pd, Cu, Si, SiO₂, YBCO, CeO₂
- **UniFilm Technology Multi-Target Sputter System**
Three rf/dc magnetrons; Ar, O₂, N₂ process gases
Ion mill for pre-sputter etch and patterning
Backside heater (>700 °C) for up to 150-mm wafers
Tooling for 100 mm, 150 mm and 200 mm wafers
Up to 99% film thickness uniformity over entire wafer, regardless of size
- **Kurt Lesker Multi-Target Sputter System**
Four rf/dc magnetrons
Load-lock process chamber
- **Ion and Plasma Systems PECVD**
Low temperature, low stress a-Si, SiO₂, Si₃N₄

Thin Film Patterning

- **Plasma-Therm 790 RIE**
Etch up to 200 mm wafers
Configured with CF₄, SF₆, O₂, Ar, H₂
- **Technics PE-IIA**
Oxygen ash and descum
- **Ion Technology Ion Mill**
Installed in UniFilm Sputter System
Configured for Ar ion milling
- **Gasonics AURA 1000 Microwave Asher**
Microwave asher
- **XeF₂ Polysilicon Etcher**

Metrology

- **Dektak III Step Profilometer**
- **FSM 8800 Thin-Film Stress Gauge**
- **Four-Point Probe**
- **Tencor Surfscan 6200**
- **Prometrix Spectramap FT750**
- **Hitachi S-4800 Type II SEM with EDS**

Back-End Assembly

- **Dicing Technology UniDice IV Wafer Saw**
- **Two K&S Model 4129 Deep Access Wedge Bonders (Au ribbon and Al wire)**
- **Unitek UniBond Parallel Gap Microwelder**