Kurt J. Lesker in the Cryogenic Community

Dr. Glynn Dyson
Cryogenics Cluster Day
19th September 2014
Overview

- Introduction to the Kurt J. Lesker Company (KJLC)
- KJLC in the Cryogenic Community
- Deposition Methods
- Axxis Coating System
- Other Application Areas
- Tec66 – Vacuum Cluster
Introduction to the Kurt J. Lesker Company

Cryogenics Cluster Day
Business Divisions

Cryogenics Cluster Day
KJLC is one-stop shop to enable its customers to create, maintain, monitor and execute processes in a vacuum

- Vacuum chambers
- Vacuum pumps
- Vacuum gauges
- Fittings, hoses, valves
- Deposition sources
- Deposition materials
Vacuum is a Means to an End

- Create a vacuum so you can ..... 
  - Coat something, deposit a ‘thin film’
  - Increase mean free pathway
  - Impede heat transfer
  - Reduce oxidation or chemical reaction
  - Evacuate lighting products
KLJC in the Cryogenic Community

- Use cryo pumps
- Supply of vacuum parts
- Supply of coating equipment to deposit thin film superconducting devices which rely on the cryogenic community for cryostats (e.g., Josephson junctions)
Deposition Methods and Needs

- Magnetron sputtering
- eBeam
- Customers typically use sputtering to deposit superconducting Josephson junction devices
- Needs to be deposited at glancing angle
- Our solution to this: the Axxis coating system
Typical Applications

- Multi-Technique Thin Film Depositions (Sputter, e-beam or thermal, ion source)
- Glancing Angle Depositions (GLAD, structured films)
- Nb / Al Superconducting circuits
Process Chamber

- Horizontal Cylinder
  - 304 stainless steel horizontal cylinder
  - 18” diameter x 18” deep
  - Aluminum o-ring sealed front door
  - Welded domed back
  - Six radial 8” CF process ports
  - Extruded aluminum frame
  - Instrument rack attached to frame
Substrate Fixture

Flat Plate Fixture

- Mounted to back of chamber
- Motorized rotation of substrate
- Motorized indexing of substrate port to port & substrate tilt
Evaporation Source Chamber

- Box shaped
  - 304 stainless steel
  - 12” wide x 12” deep x 12” high
  - Hinged aluminum front access door
  - Rectangular viewport with replaceable shield
  - Mirror for indirect viewing of melt
Electron Beam Evaporation Source Module

- 4-pocket, 8cc e-beam evaporation source
- 5.5 kW power supply
- Programmable sweep control
- Pneumatically actuated source shutter
- Deposition shielding

Related Options:

- Quartz crystal deposition controller
- Single or dual, standard or shuttered crystal head
Magnetron Sputtering Sources

- **Torus® Magnetron sources**
  - Up to three 3” Torus® 2”, 3” or 4” magnetron sources
  - Up to 5 sputter sources without LL or evaporation chamber
  - Pneumatic deposition shutters
  - Mounted to process chamber on an 8” CF full nipple
Sputtering Sources and Substrate Holder
Application Areas

- Coatings
- Optics
- UHV/Synchrotron
- University R&D
- LED
- Electronics
Vacuum Cluster

- Industry cluster established in and around Hastings
- Raise awareness and promote vacuum industry
- Worked with Sussex Coast College to develop Vacuum training course for employees in industrial sector

**Tec66 Conference**
- Talks - Photonics, Nano Electronics, Organic Electronics
- 35+ exhibitors
- 27th October 2014
- Hastings
Thank you for Listening

Kurt J. Lesker Company Ltd.
15/16 Burgess Road
Hastings
East Sussex
TN35 4NR
UK

Tel: +44 (0)1424 458100
Mob: +44 (0)79 46 545 123
Skype: kjlc.glynnd
glynnd@lesker.com
www.lesker.com