



## Thin Film Coating Services

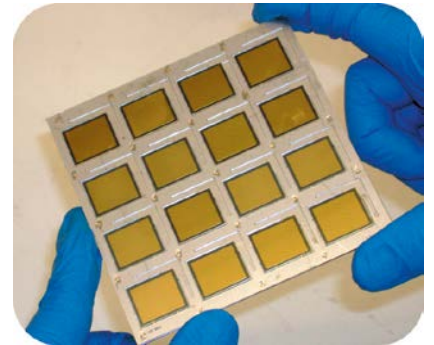
LEW Techniques offers a subcontract service for the vacuum coating of components with thin films. For demanding applications thin films of metals can be sputtered or evaporated onto metals, ceramics, or other difficult-to-coat surfaces. These coatings can provide conductive and solderable layers on non-conductive materials or barriers and protective finishes on difficult-to-plate metals. Our manufacturing know-how and dedicated in-house facilities allows us to offer a comprehensive and versatile service.

### Capability outline

- Deposition by vacuum sputtering or evaporation
- Various component substrate materials including ceramics, metals and glass
- Coating schemes suitable for soldering, wire-bonding and protective finishes
- Fine line pattern imaging by photolithography
- Pattern realisation by wet chemical and plasma etching
- Deposition through holes, around edges and on side walls
- Global or selective deposition of gold/tin (AuSn) solder

### Applications

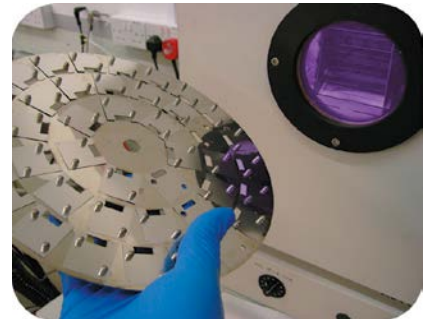
- Semiconductor heatsinks/mounts
- Filters/windows/displays
- Conductors/terminations
- Medical implements
- Reflectors/mirrors
- Earth shields/grounding planes



### Facilities

Housed in a class 10,000 clean room, our thin film facilities include:

- Up and down sputtering tools with three- or four-source magnetron sputter targets
- E-beam evaporators with four-source indexing crucibles
- RIE and plasma cleaner/etchers



### Complementary capabilities

- Laser drilling, profiling and marking
- Diamond sawing
- Electroplating
- Assembly by atmosphere brazing, soldering and welding
- Comprehensive testing facilities to ensure product quality

### Component materials

- Ceramics including alumina, aluminium nitride and silicon carbide
- Glasses including borosilicate and soda lime
- Fused quartz, sapphire and ferrites
- Semiconductor wafers including silicon and gallium arsenide
- Metals including copper, kovar, tungsten/copper

### Component geometry limits

Maximum length and width	200 mm x 200 mm
Maximum diameter	200 mm
Maximum thickness/height	50 mm



## Coatings

Depending on the equipment and coating types required up to four different coatings can be sequentially deposited in each coating run.

Typical coating layers include:

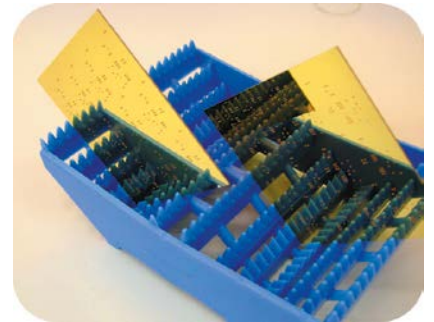
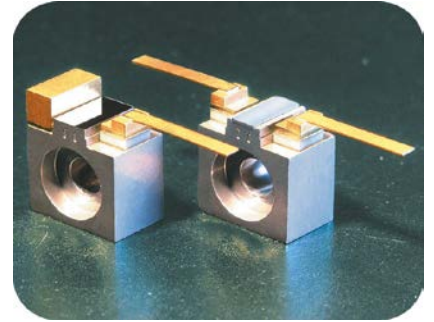
Adhesion	Ti, Cr, NiCr, TiW, TaN
Barrier	Pd, Pt, Ni
Conductor	Cu, Au
Solder	AuSn

Typical coating schemes include:

Cr/Au	For decorative/reflective finish
TiW/Pd/Au	For SnPb, SnAg soldering
TiW/Pd/Au/Ni/Au	For additional soldering leach resistance
Ti/Pt/Au	Best soldering performance but more costly
NiCr	For protective finish
Ti/Cu/Ni/Au	For high conductivity
AuSn	Solder pre-deposition for critical attach

Typical deposition thickness:

Adhesion layers	100 - 2000 Å (angstroms)
Barrier layers	0.1 - 2 µm
Conductors	0.2 - 5 µm



## Masking

By using physical masks the coatings can be selectively deposited onto required areas only.

## High resolution patterning

Utilising wet or dry film photo resists, fine high density lines and features can be resolved to create circuits, logos and other images.



## Microcircuits

See our website for details of our comprehensive capabilities for manufacturing RF and optoelectronic microcircuits.

Images are not to scale

LEW Techniques specialises in the manufacture of miniature components for the mounting of semiconductor devices. Our in-house capabilities include Thin Film, Thick Film and refractory metallising of ceramics and metals, electroplating, precision dicing, laser machining and marking, atmosphere/vacuum brazing and solder assembly.

To ensure end user compatibility, comprehensive in-house testing includes eutectic die bonding, Au wire bonding, shear strength, peel strength, coating thickness and surface finish measurement, heat testing and He leak detection.

To discuss your application in detail please contact our Technical Sales Department who will be pleased to assist you.

