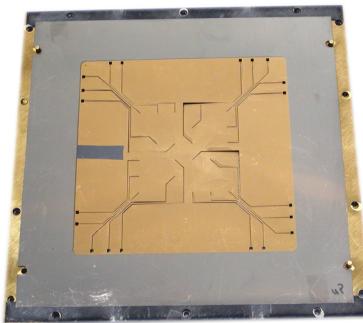


## THIN FILM

**We provide a variety of vapor deposition processes and facilities which can be reconfigured for specific applications and/or dedicated to long-term projects.**



Example Capabilities:

- Electron beam evaporation
- Sputter deposition
- Reactive deposition processes
- Atomic layer deposition
- Focused ion beam induced chemical vapor deposition

## JOINING

**We provide a full range of material joining capabilities from consultation to fabrication. We frequently partner with small businesses and industry.**

Example Capabilities:

- Conventional, step, and active brazing
- Metal-to-metal and metal-to-nonmetal brazing
- Consult on parts designs, materials, and processes to ensure joining success
- Design and manufacturing of parts fixturing



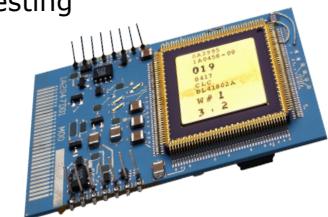
## PACKAGING

SAND2008-0750P

**We provide complete electronic packaging solutions for unique, high consequence, high reliability applications. Technologies include optical, microfluidic, MEMS, and integrated circuitry. We achieve full realization of product from design to testing with a rapid prototype capability.**

Example Capabilities:

- Flexibility of LTCC design & fabrication
- Metallization and Photolithography
- Electronic assembly, bonding and sealing
- Laser machining and wafer dicing & sawing
- Product testing



## VACUUM SCIENCES

**We design, fabricate, assemble, and characterize vacuum systems, components, and processes. We troubleshoot and upgrade existing vacuum systems. We also provide 3D solid modeling for virtual prototyping and subsequent fabrication of critical components.**

### Example Capabilities:

- Low temperature vacuum diffusion bonding
- Metal and ceramic brazing using controlled atmospheres
- Vacuum compatible welding of components, subassemblies, or assemblies
- Component realization from design through fabrication
- Helium leak detection



## CONTACT INFORMATION

### **Vacuum Sciences**

Juan Romero  
(505) 845-8264

### **Thin Film**

Ronald Goeke  
(505) 844-4171

### **Joining**

Charles Walker  
(505) 844-7103

### **Packaging**

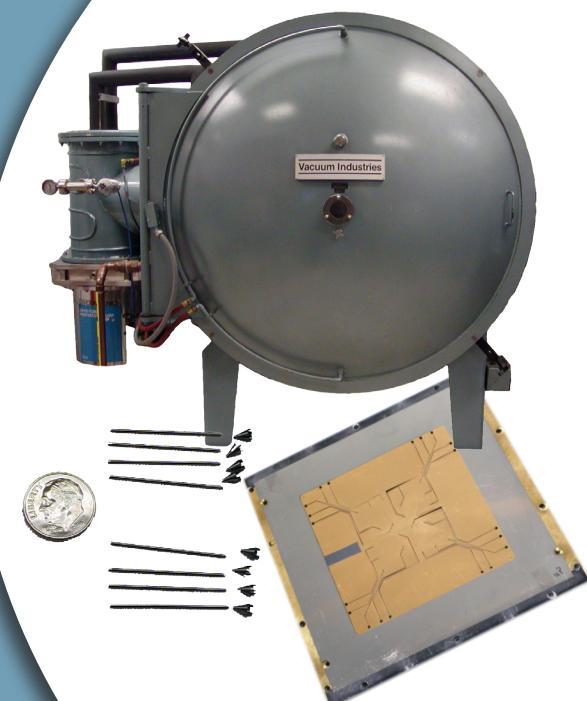
Adrian Casias  
(505) 845-9577

### **General Inquiries**

Dianna Blair  
(505) 845-8800  
[dsblair@sandia.gov](mailto:dsblair@sandia.gov)

## PROTOTYPE SCIENCES AND TECHNOLOGIES

**THIN FILM, VACUUM AND PACKAGING DEPARTMENT 2452**



**MANUFACTURING SCIENCE AND TECHNOLOGY CENTER 2400**

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**Sandia National Laboratories**