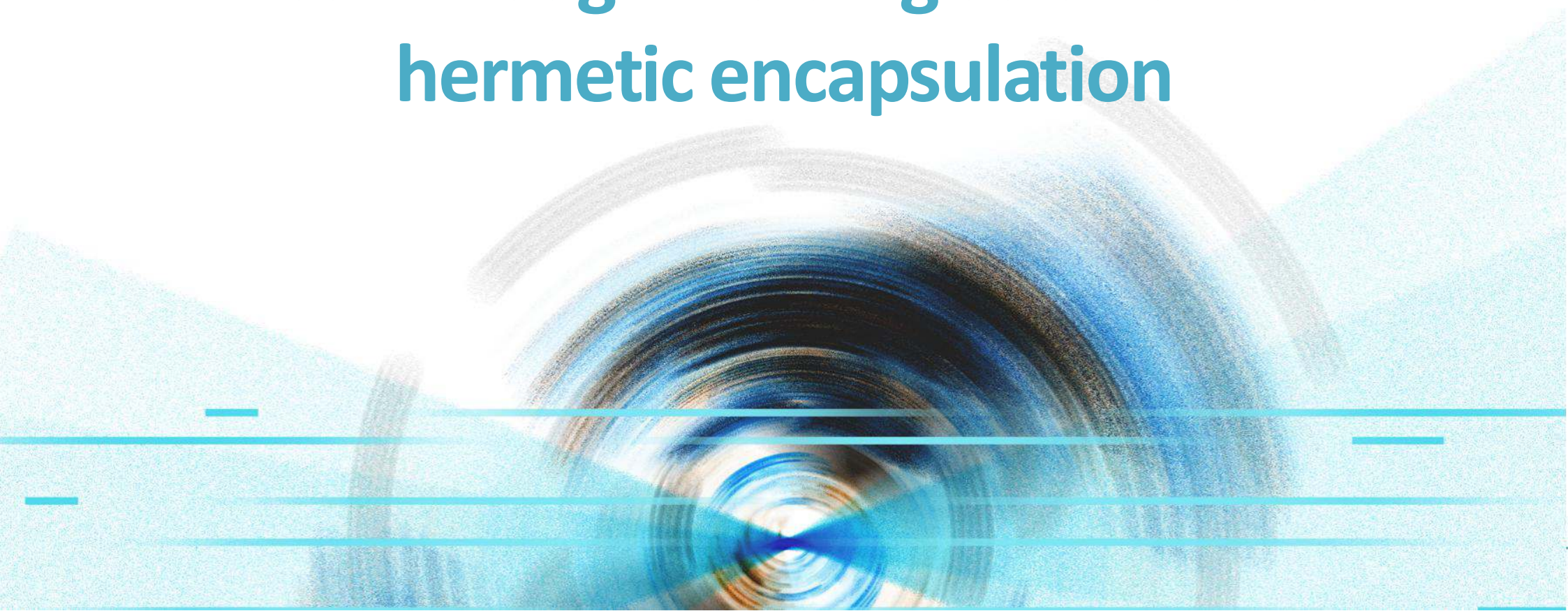


# PRIMOCELER

[primoceler.com](http://primoceler.com)

**Breakthrough welding solutions for  
hermetic encapsulation**



# Primoceler – your partner for glass encapsulation

## GLASS WELDING UNIT

- Laser based welding tool and software for hermetic encapsulation
- Tailored solutions for R&D and manufacturing

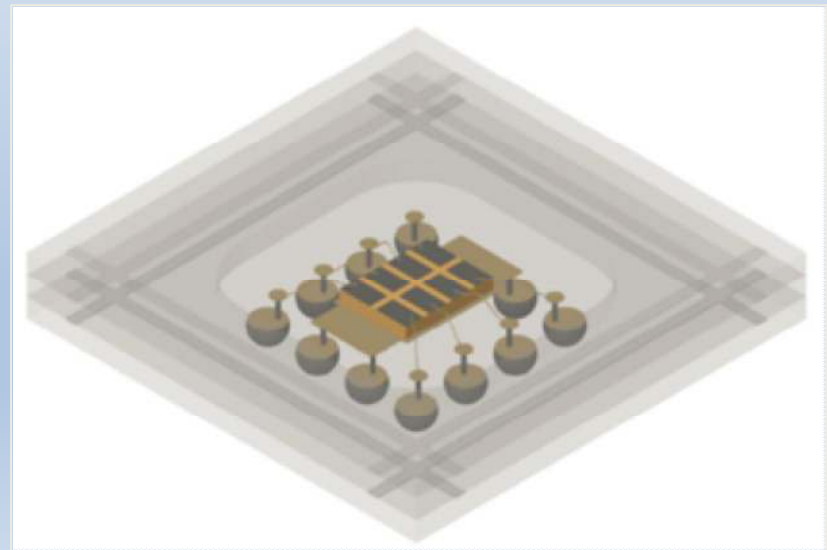


## ENGINEERING KNOW-HOW

- Solution specification
- Laboratory & clean room facilities for testing
- Installation and training
- Technical support and maintenance

# Glass encapsulation with vias

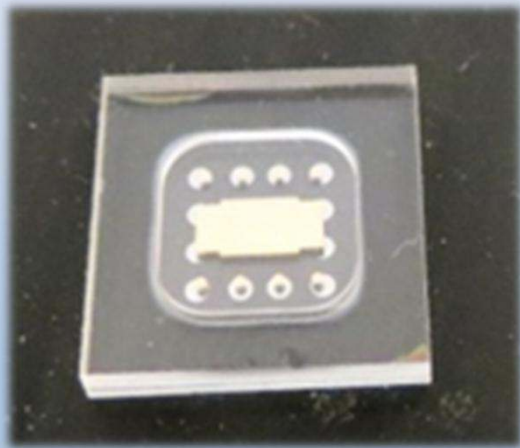
- Borosilicate lid, spacer and base plate, thickness 500  $\mu\text{m}$  each
- Package was encapsulated with Primoceler welding technique
- Volume of the free cavity  $<0,10 \text{ cm}^3$
- Silicon chip and through glass vias (TGV)



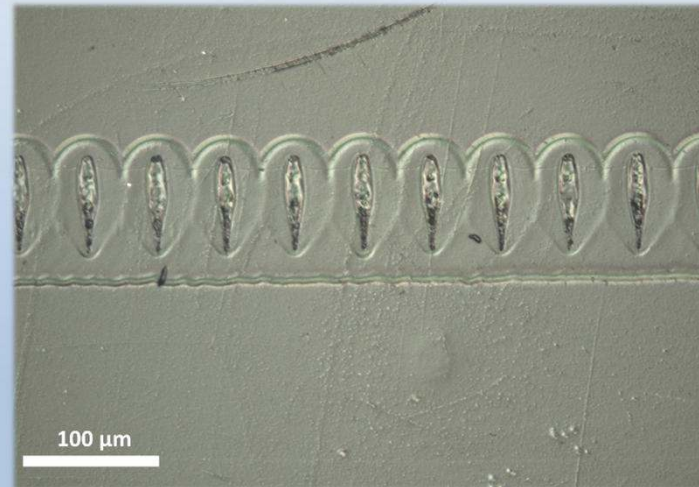


# Hermeticity test

- Radioisotope leak test with krypton 85 was performed at Oneida Research Center
- Fine and gross leak was tested



Hermeticity test samples



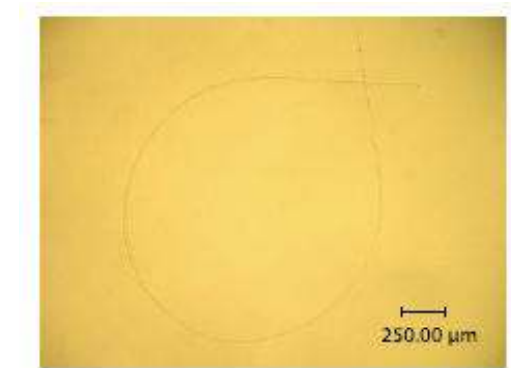
Weld seam (side view, etched)

# Results

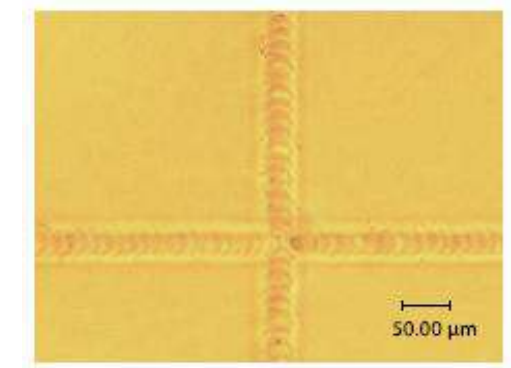
- All the devices passed gross and fine leak testing with leak rates  $<6,0 \times 10^{-12}$  atmcm<sup>3</sup>/s Kr-85
- MIL standard space limit was evidently fulfilled

# Primoceler technology benefits

- No adhesive or extra materials
- Welding at the material interface
- Superior hermeticity
- Miniaturization of the end product
  - High precision without heat affect, no safety zones needed
- High quality, homogenous seams
- Free geometry of the samples (wafer, square, tube etc.)
- Glass as material
  - Durable
  - Neutral – biocompatible



Welding of glass on glass



# Contact for more information

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