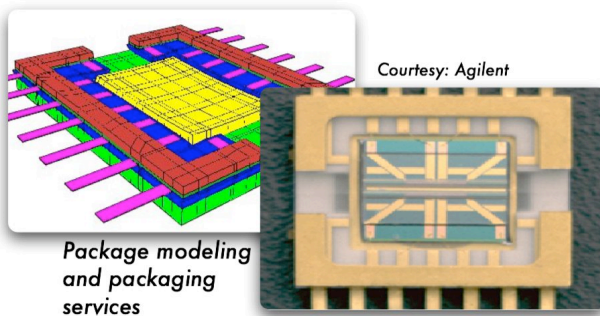


# Packaging Services

## Reducing cost

The cost of packaging can range from 30 to 95 percent of the final cost of a device. We can help you drive down MEMS, BioMEMS and MOEMS packaging costs, reduce your risk in the development cycle, and smooth the path through pilot scale to high-volume manufacturing. This is done through packaging simulation using our own CAD software IntelliSuite (Packaging Analysis Module, MEMaterial, IntelliFab). Various analyses (thermal, stress/strain, deformation, high frequency, vibrational, etc.) performed can reduce the number of prototyping cycles usually required. Plus, our foundry partner's extensive electronic and optoelectronic packaging assembly capabilities provide the proper working environment and critical interfaces between a device and the macroscopic world.



## Reducing risk

We provide design services and rapid prototype packaging for photonic, MEMS and Bio MEMS/microfluidic devices - critical steps during the proof-of-concept development phase. As your project matures our partner can do pilot scale manufacturing, working with you to develop processes and to move efficiently to high-volume manufacturing. Our foundry partner teams with several *Packaging Alliance* partners for enhanced packaging concept development, reliability, and simulations.

## Packaging technologies

- Planar optic packaging
- Optical fiber pigtailing & alignment
- Silicon optical bench
- Free space optical
- Electro-optic
- Microfluidic
- Electronic

## Tools and processes

- **Micro-assembly**
  - Wafer scale bonding
  - Silicon optical bench
  - 3D packaging
- **Wafer/Substrate Singulation**
  - Dicing
  - Scribing (mechanical & laser)
  - Cleaving
- **Adhesive dispensing**
  - Precise volume and position
  - Ultra small volume pin transfer
- **Die Placement**
  - Precision Pick-and Place
  - Flip chip
  - Eutectic bonding
- **Fiber Attach**
  - Laser weld
  - Optical adhesives
- **Interconnect**
  - Thermal gold ball wirebonding
  - Aluminum wedge wirebonding
  - Pigtailing
- **Optical Fiber Alignment**
  - Active alignment of individual fibers and fiber arrays
  - Passive alignment using silicon optical bench techniques
  - Dual fiber pigtail packages
- **Package sealing**
  - Custom packages
  - Hermetic packaging
  - Glass bond
  - Laser weld
  - Seam sealer



**IntelliSense Software**

*Solutions for the MEMS professional*

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