The irArcher® 007 is a high-performance imaging-based overlay metrology tool for advanced control and yield improvement of the wafer-to-wafer (W2W) alignment bonding process.

**R&D, Pilot Ramp and Production**
Supports 3D heterogeneous integration processes to identify excursions, monitor and improve W2W alignment.

**W2W Bonding and Overlay Process Control Flow**

**W2W Alignment and Bonding**

- Pre bonding
- Post bonding
- W2W Good Overlay
- W2W Bad Overlay
Key Technologies

- **Short Wavelength Infrared (SWIR)** illumination modes enable metrology target signal-to-noise through the substrate for the most accurate overlay measurements on pre-grinded bonded wafers.
- **Tight Total Measurement Uncertainty (TMU)** provides greater precision and more accurate overlay metrology feedback required for optimal process control and product yield.
- **Innovative focus system** enables robust and ultra-fast overlay measurements for within wafer and wafer-to-wafer applications, supporting multiple bonders.

Features, Capabilities and Support

- **Key Performance Indicators (KPIs)** for process variation monitoring
- **Advanced Process Control (APC)** infrastructure and connectivity
- **High bow bonded wafer** handling and measurement capability
- **Full automation** tool and data output, factory integration

Overlay target image examples post W2W bonding (pre-grinding), showing both wafer 1 and wafer 2 overlay target gratings.

Full Wafer Map Output

Metrology KPI Feedback Examples