



Optical Associates, Inc.

Over 50 Years of Quality and Innovation

Advanced Lithography Systems for Production, Research, and Development



OAI Means Outstanding Performance and Reliability

With innovative technologies emerging at an ever increasing pace, the demand for more technology in semiconductor production and packaging grows every day. Additionally, new markets create unique demands for application specific devices. Meeting and exceeding these challenges, OAI manufactures a broad portfolio of field-proven solutions for automated production, product development, and technology research. Found everywhere from advanced wafer labs at leading universities to semiconductor manufacturing floors worldwide, solutions from OAI have been serving global customers for over five decades.

Starting with the first mask aligners, OAI has supplied UV light solutions for the semiconductor industry since its founding over 50 years ago. Our areas of expertise include:

- MEMS
- Semiconductor Manufacturing
- Nano Technology
- Microfluidics
- Flat Panel Display
- Advanced Packaging
- PV/Solar Industries

Bringing decades of proven manufacturing experience, the OAI family of products includes:

- Mask Aligners
- UV Exposure Systems, Light Sources, and Measurement Instruments
- Resistivity Meters
- Solar Simulators
- Custom-Engineered Solutions

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Lithography Systems for High Volume Production

Model 6000 - Fully Automated Mask Aligner for High Volume Production

- Flexibility to handle wafer sizes 4" to 12"/100mm to 300mm
- Highly optimized yields (200wph in first mask mode)
- Cognix Vision Pro with customized software
- Automatic Wedge Effect Leveling
- Unlimited recipe storage
- Superb process repeatability
- Cluster tool integration
- Front and backside alignment
- Accurate top to bottom auto alignment



Optional

- *UV LED Upgrade*
- *SECS/GEM Interface Upgrade*
- *IR Lamp Kit*



Model 6000A-MC - Integrated Production System Mask Aligner with Mask Changer

- Includes all the advanced features of the Model 6000
- Reads and verifies the right mask for process stored in the Model 6000 recipes based on Fab host (SECS/GEM) request
- Improves throughput multistep in lithography processing

Integrated Production Lithography Cells System

Coat, Bake, Expose, and Develop in one complete manufacturing system. Combines OAI's Production Mask Aligner with C&D's Coat, Bake, and Develop cluster tool

- High productivity
- Low cost-of-ownership
- Multiple wafer size configurations
- Optimization for customer requirements
- Process specific wafer flows



Lithography Systems for High Volume Production



◀ Large Substrate Exposure System for RDL Panel Level PKG or Glass Panels

- First level exposure print mask on substrates
- Substrate size: 20"x20" with 24"x24" mask inserts
- Lamp power: 8kW
- Standalone system or fully integrated into existing lines

Optional

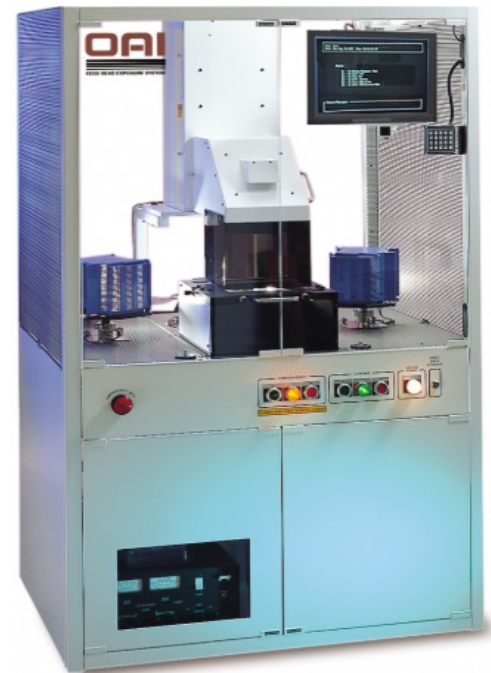
- *Flood Exposure*
- *Robotic Handling*

Model 2000 - Optical Edge or Flood Exposure System ▶

- Handles wafers up to 8"
- Cassette-to-cassette robotic handling
- Stores and logs process data
- Remote diagnostics feature
- Windows based graphic user interface
- Near, mid, and deep UV exposure available
- Intensity Controlling Power Supply with extreme stability and precision

Optional

- *UV LED Upgrade*
- *SECS/GEM Interface Upgrade*



◀ Model 2012 - 300mm Optical Edge or Flood Exposure System

- Handles 8" and 12" (200mm and 300mm) wafers
- Automated FOUP loading or cassette-to-cassette handling
- Up to 8kW collimated light beam source
- Barcode reader and remote diagnostic
- SEMI safety compliant
- Windows based graphic user interface

Lithography Systems for Low Volume Production and Development

Model 800E - Semi-Automated Mask Aligner for Frontside or Backside Mask Alignment ▶

- 3-Point automatic wafer leveling
- Microsoft Windows Operating System with unlimited recipe storage
- Remote diagnostics
- Motorized joystick: fast mode for targeting and precision mode for alignment
- One touch view adjustment: standard to wide without loss of resolution

Optional

- *UV LED Upgrade*
- *IR Lamp Kit*
- *Nanoimprint Module*



AML Wafer Bonder

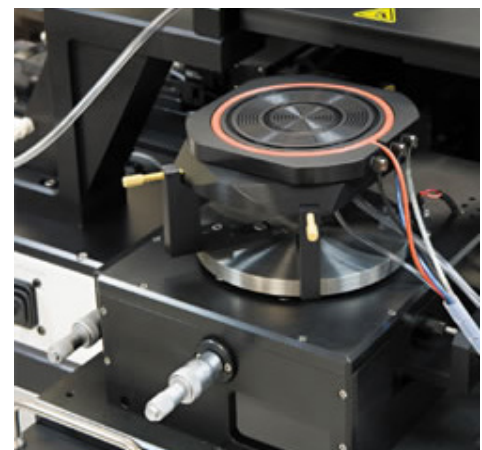
Activate, align, and bond all in one system

- In-situ alignment with 1 μ m accuracy
- Used for eutectic, anodic, direct, glass frit, thermal compression, adhesive, SLID, and custom wafer bonding
- Eliminates need for external mask aligner
- Available: Anodic silicon direct and thermal compression bond tooling
- Contact and bonding forces up to 40kN
- Autovapor injection
- Wafers held in separation
- User interface

OAI Nanoimprint Model ▶

Single Module for Hard and Soft Nanoimprinting

- Fits OAI Mask Aligners or as a standalone model
- Available with quick molds, fusion molds, or Si master molds up to 8"
- Supports lift off and etching processes
- Easy to operate touch screen controller
- Auto-release function for higher yields



Lithography Systems for R&D and Lightsources

Model 200 - Tabletop Contact Mask Aligner

- Flexible with quick-change substrates and masks
- Small substrate capabilities up to 8"
- High quality printing resolution
- Available with near, mid, and deep UV lightsource

Optional

- *UV LED Lightsource*
- *IR Backside Alignment*
- *Nanoimprint Module*
- *Vibration Isolation Table*



Model 212 - Tabletop Mask Aligner for Substrates up to 300mm

- Designed for substrates up to 12" (300mm x 300mm)
- Precision alignment
- Low cost R&D tool for large area substrates
- Used for PKG, displays, and 300mm wafers



Model 30 - UV Collimated Lightsource

Standalone or integrated into any mask aligner or exposure system

- Available with near, mid, or deep UV
 - Mercury Arc and Xenon lamps
 - High uniform beam at exposure plane
 - Low collimation half angle
 - Power: 200w to 12kW
- Optional Single Level Tooling Module*



Model 32 - UV LED Collimated Lightsource

For demanding applications. Standalone or integrated into an OAI lithography system

- Beam size: 4" to 12"
 - Wavelengths available: 365nm, 405nm, and 436nm
 - Long life, low cost, energy efficient
 - Matches Model 30" collimation and functionality
- Optional single level and multilevel tooling modules*

Lithography Systems for P/V and Solar Simulators

OAI's low cost Solar Simulators are essential for testing virtually any material that is exposed to sunlight for long or short periods of time.



◀ TriSOL Standard Class AAA (TSS)

- Delivers highly collimated, uniform light output rated 350W to 500kW
- Available with air mass filters for a wide range of solar spectra
- Used in photobiology, biomedical, solar cell testing, cosmetic testing, and paint and coat analysis
- Repeatable and reliable constant output and measurement uniformity
- Rotation beam output configurable in downward, vertical, horizontal, or 360° rotation
- Meets JIS, IES, and ASTM standards

Optional pipe adapter for CPV



◀ I-V Testing System

- Standalone or integrated with OAI I-V Measurement System
- Extremely accurate measurements of solar cell I-V Parameters and efficiency
- Proprietary I-V Rider Software measuring critical I-V parameters
- Standard ranges of testers: 1A, 1-5A, and 20A (verified at Fraunhofer, ISE, and NREL)
- Multiplexing function to test various solar cells
- Measures up to $\pm 35A$ / $\pm 10V$ / 350W I-V Range
- Features corrected I-V curves and graphical/tabular QC monitoring

Optional Normalization Kit for lamp instability

CPV Solar Simulator ▶

High Dose

- Range: 20 to 1500 suns
- Systems developed and customized to meet specific requirements

Low Dose

- Range: 50 suns



High Dose CPV



Low Dose CPV

UV Intensity and Energy Meters

For over 50 years, OAI has earned a reputation as a global leader in UV light and energy measurement. We maintain a comprehensive calibration lab dedicated to maintaining the performance, quality, and reliability of our meters.



◀ Model 308 - Handheld, precise, repeatable, direct reading instrument for UV light intensity measurements

Used in photolithography, MEMS, microfluids, 3D printing, packaging, UV curing, and sterilization

- NIST traceable
- Light intensity: 0.1mW/cm^2 to 2W/cm^2
- Features detachable single or dual wavelength probes
- Downloadable data feature (Excel)

Optional data logging software for mode, time, and wavelength

Model 656 - UV intensity and energy analyzer for all Mask Aligners and UV Exposure Systems

- Measures UV exposure time, energy, and intensity
- NIST traceable
- Measure up to 400 exposure readings
- Calibrated interchangeable probes
- Features a digital readout from 0.1 to 400mW/cm^2
- Measurements are reliable, repeatable, and dependable
- Provides percentage of deviation over series of exposures
- USB interface

Model 659 - UV intensity and energy analyzer for all Step and Repeat Exposure Systems including high intensity wafer steppers ▶

- NIST traceable and ROH2 and CE compliant
- Measure up to 400 exposure readings
- Intensity range: $7,500\text{mW/cm}^2$
- Probes available in 365nm, 400nm, 420nm, 436nm

Optional computer interface



Resistivity Meters

Precise measurement of surface volume and resistivity.



◀ **Loresta FX** - Handheld meter that measures low resistivity (10^{-2} to $10^{-6}\Omega$) for a wide variety of materials from paint, paper and flooring to space applications

- One-touch handheld device with extremely accurate measurement
- Wide range of four pin probes available
- One-touch reading of Ω , $\Omega/\text{sq.}$, and $\Omega\text{-cm}$
- Autoranging feature
- Memory storage to 1,000 data points
- Data output to USB



◀ **Loresta GXII** - Meter that measures the surface and volume resistivity in low ranges with software to calculate resistivity correction factors

- One-touch reading with probes
- One-touch operation with auto hold and timer mode
- Uses a four pin method
- Features 7" TFT-LCD touchscreen
- Silicon mode for silicon measurements
- Expanded measurement range: 10^{-6} to $10^7\Omega$



◀ **Hiresta UX** - High performance meter that measure surface and volume resistivity in high range (10^3 to $10^{14}\Omega$) of non-conductive materials

- Measures non-conductive and antistatic materials
- Features 29 steps of applied voltage with auto sweep
- Available in a wide variety of circular probes, ring probes, and two pin probes
- Single operation for measuring Ω , $\Omega/\text{sq.}$, and $\Omega\text{-cm}$
- Compatible with ASTM D257 and JIS K 69911
- Accurate and repeatable results

Optional computer interface



◀ **Conductive and Non-Conductive Powder Resistivity Measuring System**

- Measure bulk density and volume resistivity of powders with precisely controlled pressure
- Measure a wide range of powders
- Provides a better powder filling system for improved repeatability and reliability
- Interfaces with a computer for graphic result display

OAI Value Statement

Customer Value and Service

Customers come first at OAI. Innovations, procedures, safety precautions, and new value developments are all customer centric to ensure longevity in OAI products and satisfaction for our customers.

Quality

All products produced by OAI go through rigorous quality control testing to ensure all systems meet both our and our customer's standards. Reliability is critical to ensure smooth business operations and continued run time.

Innovation

OAI strives to constantly innovate and create new solutions for our customers as new technology advances and is available. Our systems are highly functional solutions based on the customer's unique requirements.

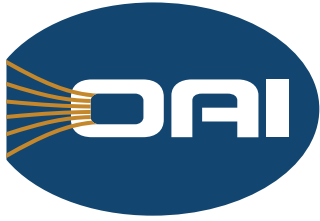
Precision

Down to the nanometer, ohm, or watt, OAI systems will match and exceed customer requirements to ensure uniformity across all applications.

Culture

OAI employees create an environment where new ideas are welcomed and explored, every individual has the capacity to grow, and all work together to create an environment of respect and inclusion.






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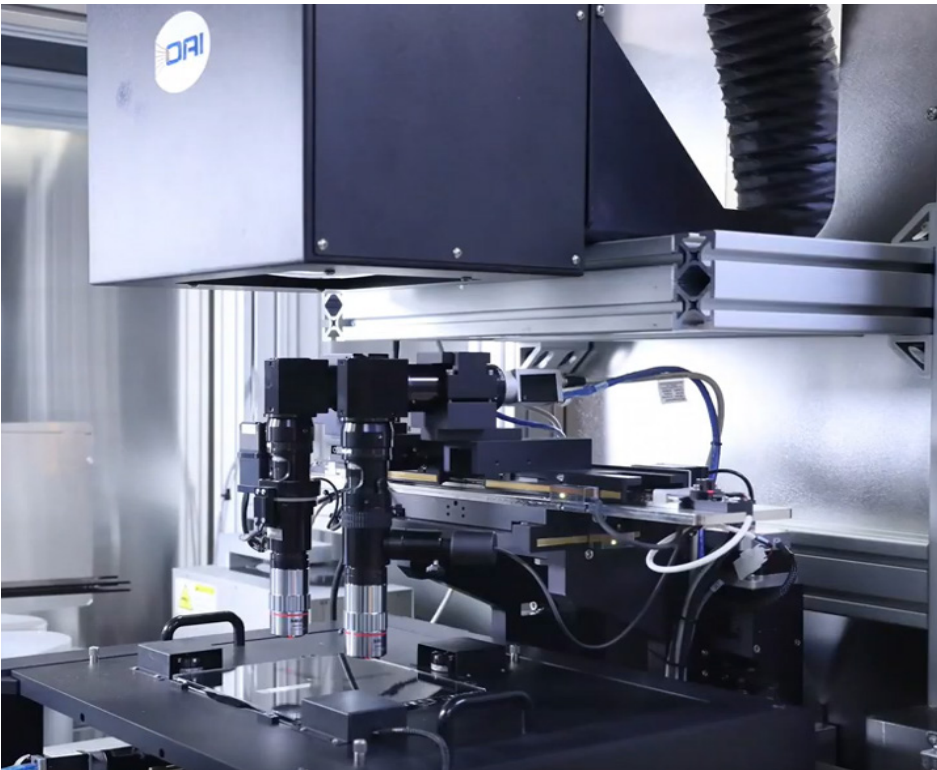
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