

McBain BT-IR Benchtop Infrared Microscope System

For interior observation, imaging, verification and inspection of materials that are transparent in NIR (740nm to 1100nm) and SWIR (900nm to 1700nm)

The McBain BT-IR Benchtop Microscope Inspection System is an exceptionally powerful and flexible tool with a small footprint and an affordable price.

The McBain BT-IR system has a motorized XY stage with joystick controls to navigate, observe and measure bonded wafer/die alignments, find defects in a manual mode and determine material stress via the system's optional birefringence capability. The BT-IR is well suited for QA/Reliability and R&D applications to enable continuous process improvements for production.

These systems are available with a variety of optical and illumination accessories and custom wafer/part fixtures.

APPLICATIONS

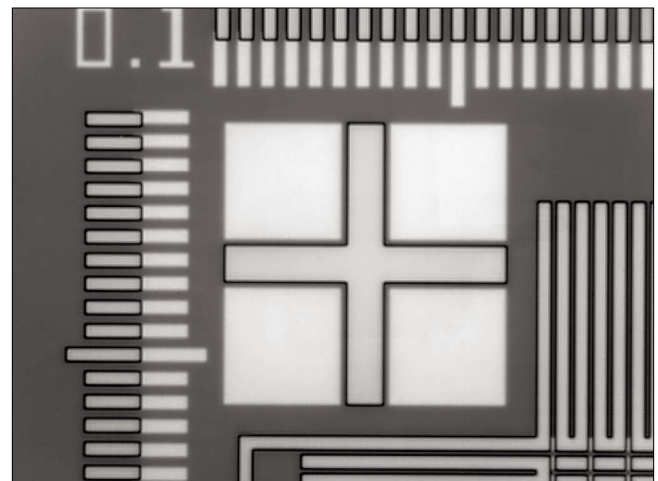
- Bonded wafer alignment metrology
- Die alignment (flip-chip or hybridization) metrology
- Sub-surface inspection, verification and imaging
- MEMS device inspection
- 3D stacking process development and control
- Incoming wafer inspection
- Birefringence for material stress characterization
- Wafer-level CSP's
- Photovoltaics
- Aperture measurements
- Thickness measurement by focusing on both sides of the wafer and recording Z movement of the objective lens

CAPABILITIES

- Cooled InGaAs digital camera (900-1700nm)
- Silicon-based digital camera option for NIR applications
- NIR/SWIR-optimized Koehler Epi-illumination
- Sub-stage illumination for transmitted NIR/SWIR applications
- Filters for specific wavelengths
- Diffusion filters for even illumination
- Polarization and analyzer filter sets
- Aperture and field diaphragms for image optimization
- Multiple series of NIR/SWIR objectives for application optimization, 1x through 100x objectives (Effective 10x to 1000x magnification)
- Submicron optical and digital resolution



McBain BT-IR Benchtop Infrared Microscope System



Alignment fiducial on a bonded pair of wafers

- 8" x 8" motorized XY stage (other sizes available)
- Manual or motorized objective turrets
- DRO (Digital Read Out display) for measurements and coordinates
- Large monitor for live and stored image display

BT-IR Microscope System

FOR NIR/SWIR INSPECTION & MEASUREMENT

- **In Process:** Verification of pre-bond and/or pre-hybridization for critical alignment applications such as: MEMS, wafer bonding, 3D chip stacking, crack/chip inspection and metrology
- **Post Process:** Verification, validation, inspection, and measurement of critical sub-surface features in Si, GaAs and other NIR/SWIR-transmissible materials
- **Failure Analysis:** Process development tool verification, part characterization, qualification and environmental testing

POWERFUL

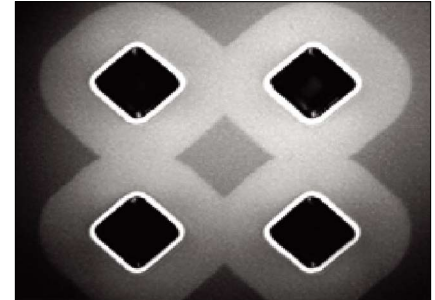
- Designed for manual operation with convenient motorized XYZ joystick control
- Integrated digital readout with XYZ coordinate location
- Able to penetrate thicker more highly doped materials with rougher surfaces than other systems

PRECISE

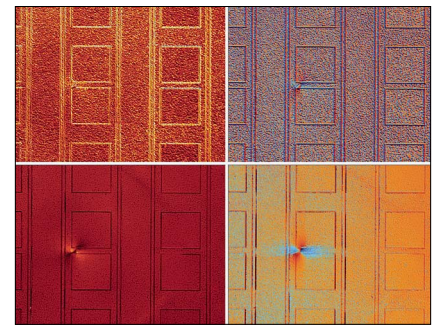
- Submicron-precision optical measurements
- Precision staging, to 0.1 micron linear encoder resolution
- Highest resolution 900-1700nm InGaAs digital camera in class:
 - Standard configuration 640 x 512 pixel, nominal resolution
 - Optional 1280 x 1040 pixel, nominal resolution
 - Optional 320 x 256 pixel, nominal resolution

FLEXIBLE

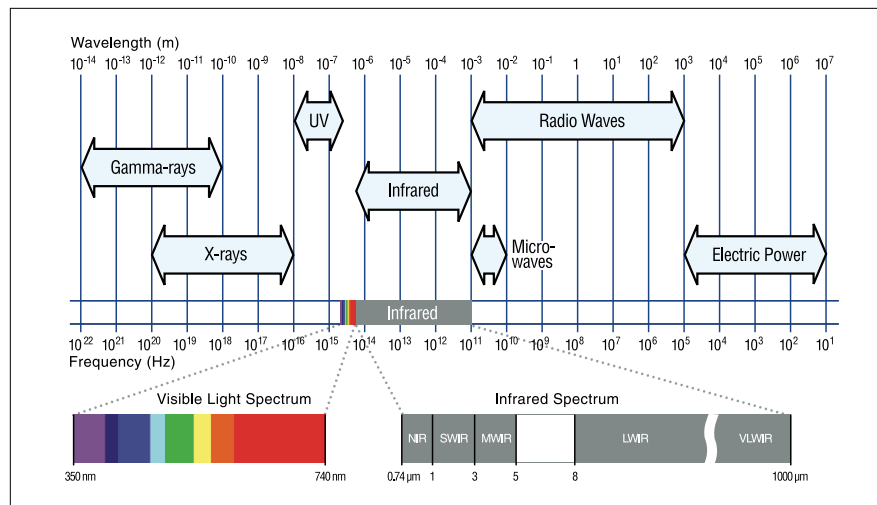
- Multi NIR/SWIR band-pass filters available
- Polarization-ready
- Transmitted illumination packages available
- Optional under/over capability available
- Application-specific customizable hardware and optics
- Scalable up to McBain's automated production systems:
 - DDR-200 NIR Inspection System
 - DDR-300 NIR Inspection System
 - DDR-2000 SWIR Inspection System



Multi-layer alignment verification



Birefringence option



The electromagnetic spectrum

McBain Systems Regional Sales
 410 N. Roosevelt Avenue, Suite 105
 Chandler, AZ 85226
 Tel: (800) 675-4356
 Email: sales@mcbainsystems.com

McBain Systems Regional Sales
 6565 N. MacArthur Blvd., Suite 225
 Irving, TX 75039
 Tel: (800) 675-4356
 Email: sales@mcbainsystems.com



McBain Systems Headquarters
 2665 Park Center Drive, Bldg. A
 Simi Valley, CA 93065

Tel: (805) 581-6800 Fax: (805) 581-6801
 Email: sales@mcbainsystems.com
 www.mcbainsystems.com