EXPLORING YOUR CLEAN ROOM

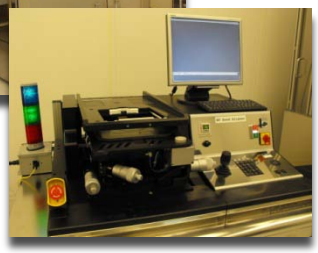
No. 1

Wisconsin Center for Applied Microelectronics

The Wisconsin Center for Applied Microelectronics at the University of Wisconsin-Madison provides a research facility for microfabrication technologies, products and innovations. In order to give students a state-of-the-art education and to maintain leading-edge research programs, we continue to improve this advanced laboratory.

Location: The Center is located third floor of the Engineering Centers Building, 1550 Engineering Drive, Madison, WI 53706
Lab Manager: Dan Christensen, 608-262-6877
Website: http://www.engr.wisc.edu/centers/wcam/

What's New in the WCAM?



New to WCAM is the EVG 620. It is a separate bond aligner designed for wafer-to-wafer alignment prior to wafer bonding in the EVG 501. Presently, this system is capable of aligning 100mm wafers. This is a desktop system with a manual stage for backside alignment. This method has a resolution of ± 2µm.

The EVG wafer bonding system is actually two separate units, one to perform wafer cleaning and one for bonding. The EVG 301 wafer cleaning station has programmable steps for spin speed and DI water dispense with mega-sonic excitation. The EVG 501 bonding unit has interchangeable chucks for 2-, 3-, and 4-inch wafers. The bonding unit can be operated manually or with programmed processes to control the heating, cooling, electrode force, voltage, and bonding time. Both the top and bottom heaters have a range up to 550ºC. The electrode force is 1-7000 Newtons depending on the bonding method used. Voltage for anodic bonding is up to 1200 volts.

Feature tool -- Did you know?

NIKON MICROSCOPE AND WILD MACROSCOPE IMAGING STATION

One of the more popular features available to users in WCAM is our Imaging Station. The station includes both a Nikon LV100 Microscope and a Wild 420 Macroscope, each sporting a 5-megapixel camera. A user is able to capture sample images, manipulate and annotate the images which can then be exported via email, Internet connection or flash drive.

The Nikon microscope is configured for both episcopic (reflective) and diascopic (transmitted) illumination. The par focal objectives available are 5x, 10x, 20x, 50x and 100x. Microscopy methods available are bright-field, dark-field, polarized and differential interference contrast.

The Wild 420 Macroscope produces an erect, laterally correct image illuminated by a fiber optic light ring. The Wild has a large depth of field and therefore is capable of imaging large objects. The par focal zoom magnification is from 5.8x to 35x.

What users find especially helpful is the Nikon imaging software. The software has a wide range of image enhancement capabilities such as measurement and annotation. Additional features include stitching images together to create a large area image and merging images vertically to create a single extended depth of focus image.

My Web Space – Take a look

The Imaging Stations is just one feature available to users in WCAM. You can read descriptions of all equipment available through WCAM's group directory located on My Web Space.

Once you have entered into the directory you will easily find all sorts of information listed in categories. Here is just few:

- Approved Materials – WCAM is sensitive to each user's research needs. This involves a multitude of materials being used in the clean room. To help facilitate the best equipment choice for materials being used, we have created a searchable listing for material/equipment compatibility.
- Equipment Descriptions – Here is the heart of the clean room, the equipment. Each piece of equipment is described. We've even broken the list into processes such as lithography. In a few mouse clicks, you can open a document and find out what size mask an aligner can hold or many other features.
- Training Videos – The directory even has some training videos for you to view. For example, you can view the operation of a sputter system or learn how to gown up to enter the clean room.

As you will find, the My Web Space site offers insightful information to help researchers use the clean room facilities. And, staff is ready to assist researchers with their processing needs.