

**Nanofabrication Research Facility
Indian Institute of Technology Delhi**

30 September 2011

The Nanofabrication Research Facility is planning to procure an Optical Mask Aligner/ Photolithography System. Quotations for suitable systems matching the desired specifications and following IITD norms are hereby invited for the purchase.

Complete requirements for a suitable **Optical Mask Aligner/ Photolithography System** are listed below:

ESSENTIAL SPECIFICATIONS:

A. DOUBLE-SIDE MASK ALIGNER

1. **Substrate size:** Upto 150 mm (6-inch) diameter (option for processing small pieces/wafers of 6 mm diameter or width) and wafer thickness from 0.1 mm to 1 mm.
2. **Exposure modes with the following minimum feature size specs:**
 - a. Vacuum contact: 1.0 μm or better
 - b. Soft contact: 2.0 μm or better
 - c. Proximity: 5.0 μm or better
 - d. Large gap : 10 μm or better
 - e. Hard Contact: less than 1 μm
3. **Alignment gap:** 1 to 300 μm in steps of 1 μm or better
4. **Mask plate thickness:** As per standard plates (maximum: 3 mm)
5. **Alignment accuracy:** Top and back side: 1 μm or better
6. Image storage and fine focus control for simultaneous focused images of mask and wafer with CCD camera of resolution 500x480 pixels or better
7. Software for operation, recipes, remote diagnostics
8. PC with high end CPU & graphic card and high-resolution flat panel monitor (min. 17 inch) with electronic brightness, contrast and magnification, brightness ratio adjustment.
9. Exposure unit (Universal Lamp housing upto 1000 W lamps):
 - a. Exposure lamp: Hg 350 W (2 nos.) **Optional : Hg 1000 W lamps with connection etc.**
 - b. Sockets, cables and connectors, optics housing, mirrors, lenses and filters for 350nm to 400 nm wavelength range.
 - c. Operation in constant light Intensity/Power mode with display of intensity and power
 - d. UV sensors for at least two wavelengths of 365 nm and 405 nm. UV power/ light intensity meter, one for 365 nm and the other for 405 nm
 - e. Parallel light: $\pm 5\%$ uniformity or better for a 150 mm wafer
10. **Alignment Stage:** X, Y and Theta with micrometer spindles, motorized Z-axis thickness variation
 - a. X and Y directions: ± 5 mm
 - b. Theta: ± 30 or better.
 - c. Mechanical accuracy: 0.1 micro meter
11. Automatic Wedge compensation system
12. **Top side alignment microscopes:**
 - a. Travel range: X = 40 mm; Y = 80 mm
 - b. Objective separation : 35 to 150 mm
 - c. Two eyepieces : 10X
 - d. 3 position objective turret
 - e. Pairs of objective : 5X;10X;20X
13. **Bottom side alignment microscopes:**

- a. Two video microscope with selectable magnification of 90x/290x
- b. Objective separation: 25 to 100 mm
- c. Y direction: 50 mm or more
14. Light Source for Bottom and Top Side Microscopes
15. Mask holders for holding Masks in the range 3.5 inch x 3.5 inch to 5 inch x 5 inch and 6"x6" to 7"x7" with exposure opening for wafers of 2", 3", 4" and 6" diameter with displaceable stop pins.
16. **Wafer chucks** for 2", 3", 4" and 6" diameter wafer loading for vacuum, hard-soft-contact exposure and proximity contacts .
17. Double membrane oil-free vacuum pump with connectors (220 V /50 Hz)
18. Separate intensity power meter and sensor for calibration.
19. At least one spare lamp for the mask aligner.
20. Facility for **Nano Imprinting Lithography** including complete UV-NIL accessories.
21. **Vibration Isolation table** matching the Mask Aligner must be included.
22. All the spares required during installation should be provided by the supplier.

B. Spin Coater (Compatible with above mask aligner)

The system should be in table top configuration and stable at its highest speed and acceleration with no vibration. System must be compatible with clean room of class 100.

1. **Substrate size:** 2", 3", 4" and 6" diameter wafer and smaller substrates/pieces.
2. **Speed:** upto 6000 rpm (programmable) with controlled acceleration in discrete steps.
3. **Spin process time:**
 - a. minimum: 1 second
 - b. maximum: 15 minutes or higher
 - c. step size: 1 second or better
4. **Vacuum pump:** oil free to hold wafers at all desired speeds with vacuum interlock facility.
5. **Chucks:** for wafers of sizes: pieces upto 1", wafers 2", 3", 4" and 6" with provision of centering.
6. **Power requirement:** 230V single phase 50Hz with voltage variation of $\pm 10\%$.
7. All the spares required during installation should be provided by the supplier.
8. System should be CE certified, should meet SEMI Standard and should be clean room compatible .

ADDITIONAL OPTIONS:

These may be quoted separately as optional capabilities of the equipment. All options must be fully compatible with the above specified configuration.

1. **Spares** not included in the above system and needed for normal or additional operation for one year should be mentioned separately.
2. **Warranty:** for two years excluding consumable parts like lamps etc for Mask Aligner and spinner.
3. **AMC** : For next three years without spares.

Interested suppliers/manufacturers are kindly requested to submit/send technical and financial bids (*FOB New Delhi, financial and technical bids in separate sealed covers*) for the above-mentioned equipment by 5pm, 21st October 2011.

I. ALL BIDS MUST HAVE THE FOLLOWING INFORMATION.

12. *Supplier must mention the following details about the warranty:* Number of years, Starting date (from the date of installation or date supply). Additional charges in case

extended warranty is required. Also mention if different components have different periods of warranty.

13. Please indicate the warranty is at customer site or not.
14. Please indicate the critical spares and their expected life time.
15. Quote the prices of listed accessories separately.
16. Delivery period must be clearly mentioned.
17. Validity of the quotations should be at least for 90 days.
18. All quotations must be F.O.B. New Delhi.
19. Please provide user list of similar systems installed within India and abroad.

II. PLEASE NOTE THE FOLLOWING POINTS

10. Mode of payment will be through letter of credit in case of imported items. Any advance payments shall be approved only as per IIT Delhi norms.
11. The Institute has the right to accept or reject any or all quotations without assigning any reasons.
12. The bidder must submit quotation for at least for one full experiment. Quotations for individual parts will be rejected.
13. **Since the equipment is meant for teaching purpose in a reputed educational Institute in India, a special price discount may be offered.**

The sealed quotations must be submitted to:

Dr. Manish Sharma
Indian Institute of Technology Delhi
Nanofabrication Research Facility,
Block VI, Room 116,
Hauz Khas, New Delhi – 110 016
INDIA

DEADLINE for submitting the quotations: 5pm, 21st October 2011.
