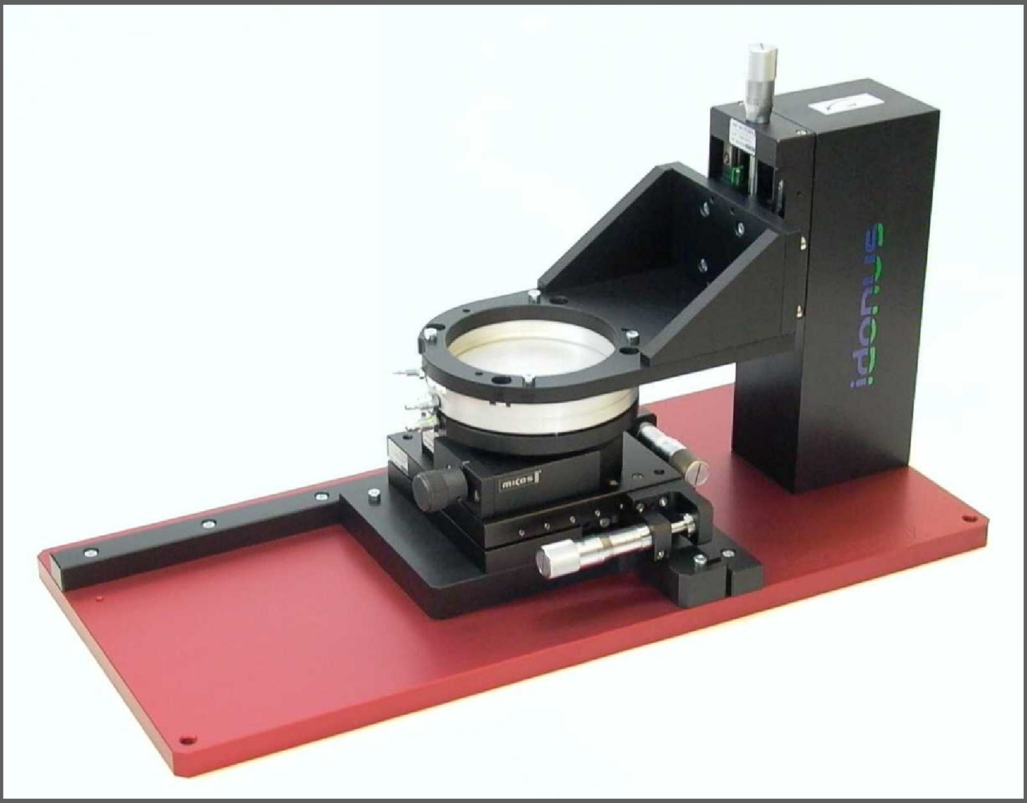
# Product Information Brochure



# Shadow Mask Aligner

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# Shadow Mask Aligner

## *General Information*

Thin film deposition through a shadow mask is a powerful process for PVD layer structuring. It allows to replace one photolithographic and one etching step by precise masking of the substrate during deposition. A basic problem of the process is the alignment and temporary fixation of the shadow mask and the wafer.

Idonus provides a system for accurate and reproducible alignment of a shadow mask and a wafer with an integrated vibration-resistant clamping chuck. An alignment tolerance of 6 µm was demonstrated with the help of a microscope. The chuck can directly be inserted in the vacuum chamber for PVD. After deposition the chuck is opened and the wafer and the mask are separated without damaging the wafer. The shadow mask can be reused.

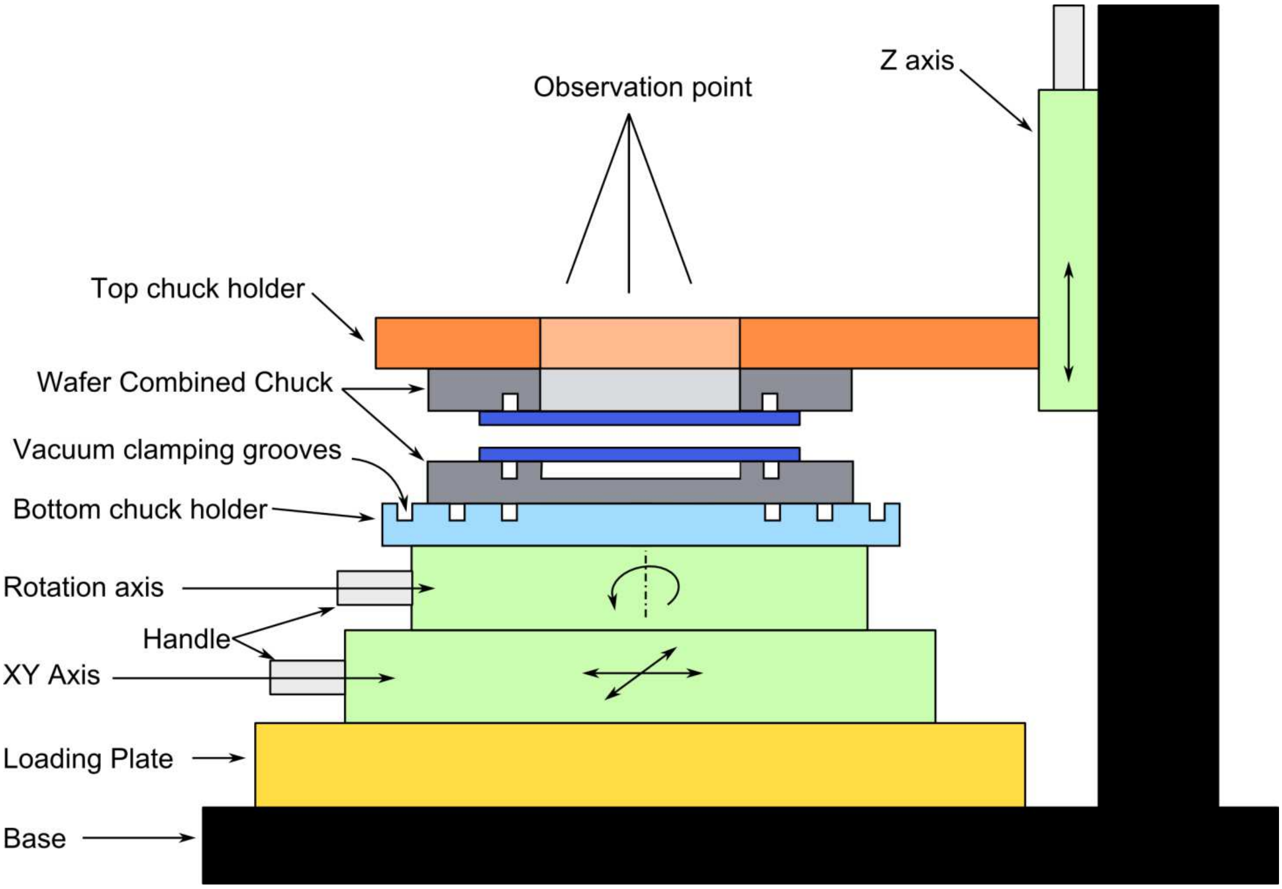
Deposition chucks can be supplied for any substrate size and can be adapted to your requirements. We also provide precise and cost efficient shadow masks made of various materials like metal, silicon, glass or ceramic.

### Benefits of the Shadow Mask Aligner

- Precise and reproducible PVD layer structuring
- Vibration-resistant chuck for PVD
- Easy, damage free wafer clamping mechanism
- Simple handling during alignment due to vacuum clamping
- Ideal for different wafer sizes
- Customized chuck
- No installation
- Low running costs

# Shadow Mask Aligner

## *Schema*



Principle section view of the complete system

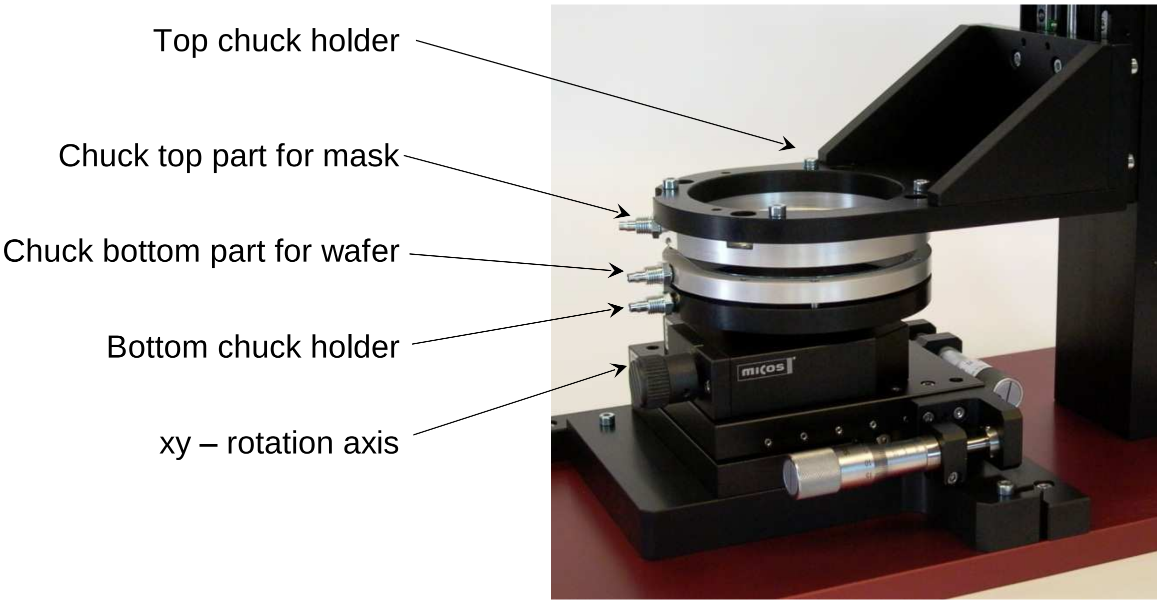
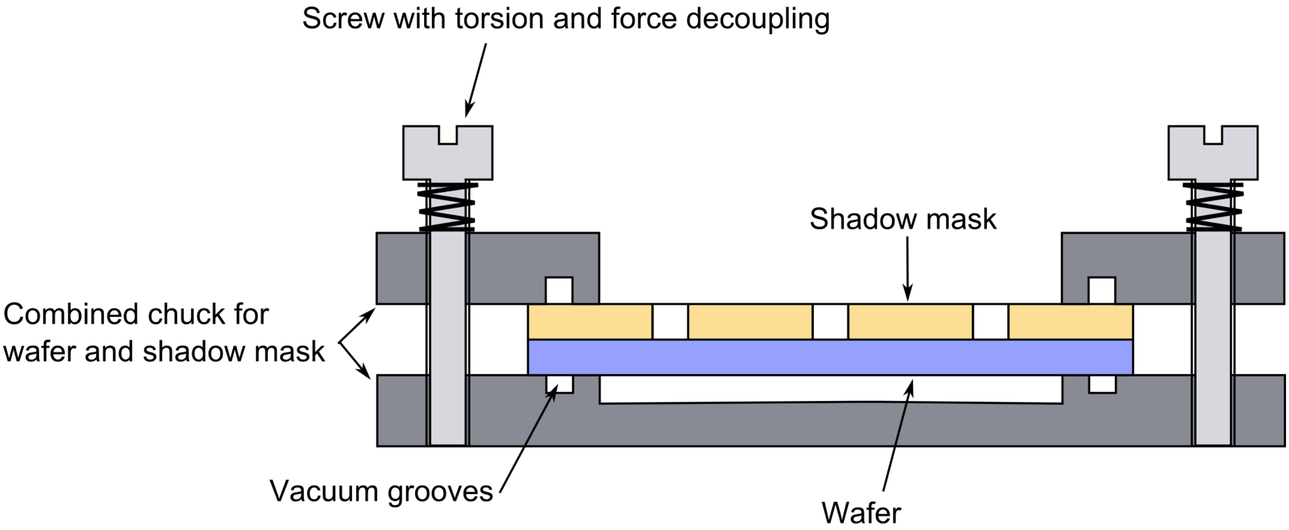


Image of a 100 mm system with a chuck ready for alignment

# Shadow Mask Aligner

## *Details: Chuck*

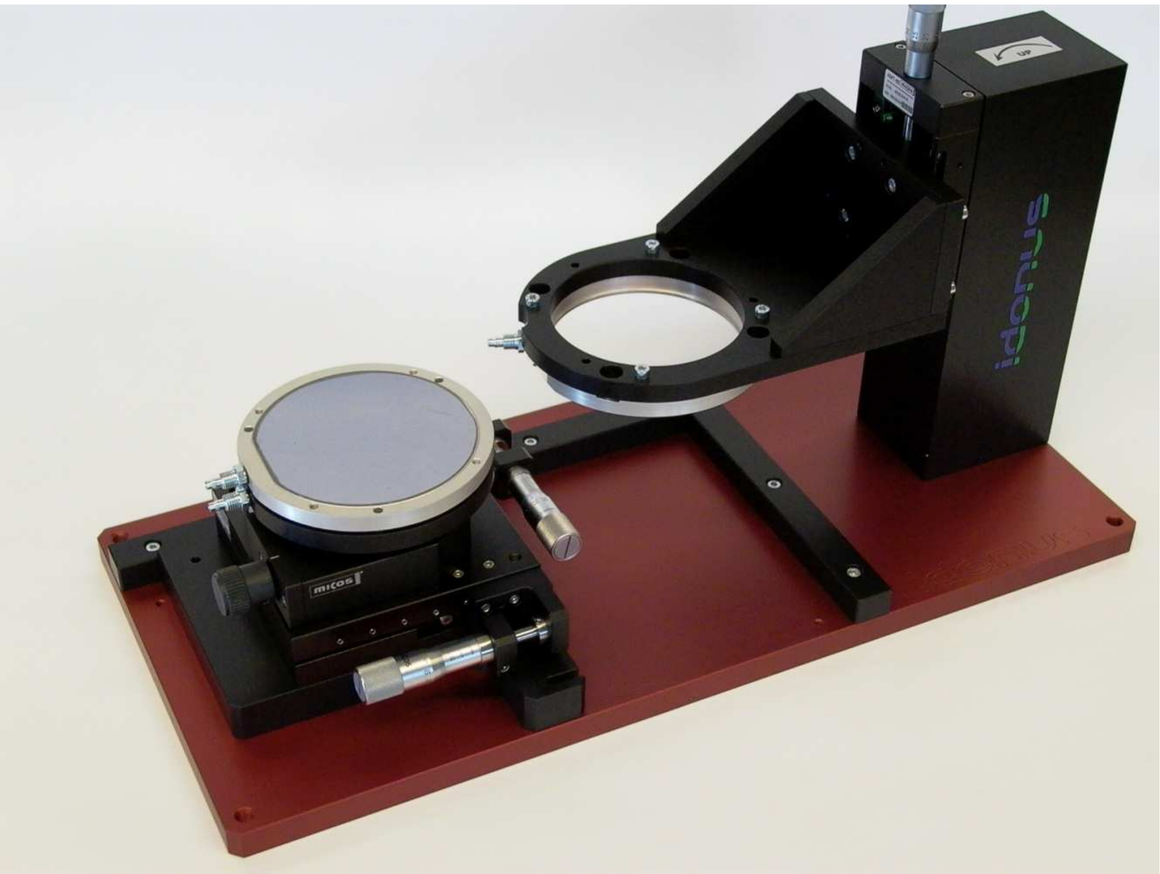


Principle section view of the chuck with clamped wafer and mask. With the chuck any wafer and mask thickness can be clamped. The chuck exists for 100 / 150 and 200mm standard wafer size. Special sizes can be supplied.

Bottom (left) and top part of the chuck with vacuum connector.
For the bottom part we also fabricate a version with opening.

# Shadow Mask Aligner

## *Details: Vacuum unit*



Bottom unit slid out to load bottom chuck with wafer.
Top chuck ready to insert mask (mask not loaded in picture).

Pneumatic board for individual regulation of wafer,
mask and chuck clamping during alignment.

# Shadow Mask Aligner

## *Technical Specifications*

| **Product Code** | **SMA** |
|---|---|
| **Wafer and mask sizes** | |
| Diameter | 100, 150 or 200 mm depending on equipment configuration |
| Thickness | independent |
| **Stage characteristics** | |
| Range in X and Y | Scale step 10 µm - sensitivity 2 µm |
| Range in Z | Scale step 10 µm - sensitivity 2 µm |
| Rotation | 360° endless |
| Tilt | Factory calibrated and manual adjustment by technician |
| **Alignment precision** | After sputtering |
| Linear alignment | Typically 6 µm ; Max 10 µm |
| Rotation alignment | 0.001 to 0.009 Deg |
| **Chuck** | |
| Wafer sizes | 100 mm or 150 mm or 200 mm |
| Chuck material | Aluminium with or without anodizing |
| Chuck thickness | 20 mm depending on wafer and mask thickness |
| **Shadow mask** | Customized shadow masks can be provided |
| Material | Silicon, quartz, glass, metal, ceramic |
| **Dimension (mm)** | |
| Footprint (WxD) | 500 x 250 $mm^2$ |
| **Installation** | |
| Need of | Microscope for visual control during alignment |
| | Vacuum |

**Note:** System can be customized, please sent us your special requirements!

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