

**scia systems**



**scia Trim 300**

**PRECISE SURFACE CORRECTION ON 300 mm**

## Features & Benefits

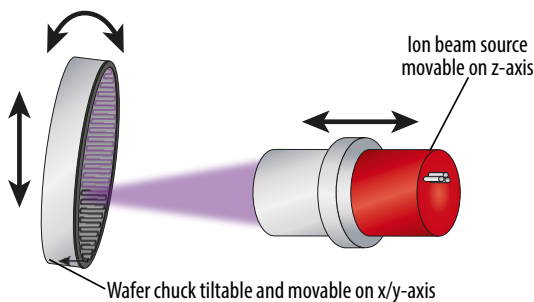
- Significant yield improvement
- Film thickness uniformity to be adjusted down to atom level of 0.1 nm
- No edge exclusion with electrostatic chuck
- Sub-nanometer removal with zero base etch function
- Processing of film and wafer materials without restrictions
- Throughput and maintenance optimized design for low production costs
- Processing of wafers with photoresist masks due to good wafer cooling

## Applications

- Frequency trimming of bulk acoustic wave (BAW) or surface acoustic wave (SAW) filters
- Thickness trimming of silicon on insulator (SOI)
- Dimensional correction of MEMS structures

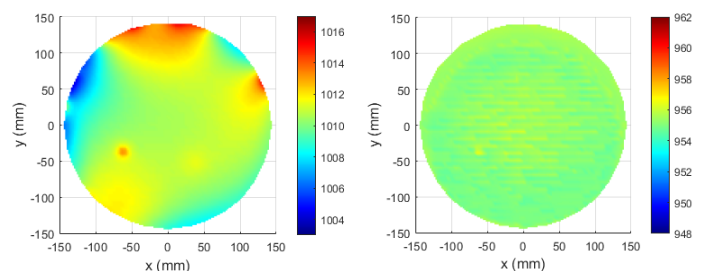
## Principle

- Ion Beam Trimming (IBT)
  - Focused broad ion beam scans across wafer surface in vertical setup for low contamination
  - Local material removal is controlled by adjusting the dwell time



## Application Example

- Ion beam trimming of SiO<sub>2</sub> on a 300 mm wafer
  - Standard deviation: Pre: 1.3 nm Post: 0.3 nm  
Improvement factor: 4.3
  - Average thickness: Pre: 1010.7 nm Post: 955.1 nm  
Removal: 55.6 nm
  - Process time: 9:55 (min:sec)



Pre (left) and post (right) ion beam trimming results

## Technical Data

<b>Substrate size (up to)</b>	300 mm dia., all standard wafer sizes possible
<b>Substrate holder</b>	Water-cooled, helium backside cooling contact, electrostatic clamping without edge exclusion
<b>Axes performance</b>	Max. velocity 0.25 m/s, max. acceleration 15 m/s <sup>2</sup>
<b>Ion beam source</b>	37 mm circular RF source (RF37-i) with 7 ...15 mm (FWHM) or 80 mm circular RF source (RF80-i) with 12 ... 20 mm (FWHM)
<b>Neutralizer</b>	Hot filament neutralizer (N-Fil)
<b>Typical removal rate</b>	SiO <sub>2</sub> : 6 x 10 <sup>-3</sup> mm <sup>3</sup> /s (RF37-i), 17 x 10 <sup>-3</sup> mm <sup>3</sup> /s (RF80-i)
<b>Film variation after IBT</b>	< 0.5 nm RMS (dependent on input quality)
<b>Throughput</b>	6 Wafer/h (50 nm Si on 300 mm wafer)
<b>Base pressure</b>	< 1 x 10 <sup>-6</sup> mbar
<b>System dimensions (W x D x H)</b>	3.20 m x 2.90 m x 2.20 m, for single chamber with EFEM for 270° arrangement (without electrical rack and pumps)
<b>Configurations</b>	Single chamber with cassette handling, cluster system with 2 process chambers and cassette handling
<b>Software interfaces</b>	SECS II / GEM, OPC

