

Semiconductor Overlay Metrology

“Smaller geometries are resulting in accuracy issues that must be addressed in imaging overlay tools ... overlay [metrology] is critically dependent upon residual aberrations in the optics - the most critical one being the microscope objective.”

*“Metrology, Inspection, and Process Control in VLSI Manufacturing.”
The Information Network, New Tripoli, PA, USA, 2009.*

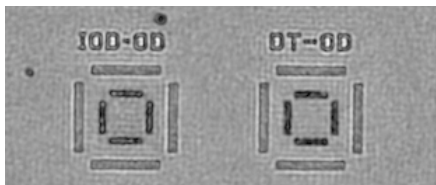
Phase focus has developed a completely lensless imaging technology, in which lenses are replaced by a computer algorithm: the Phase Focus Virtual Lens®.

Without the need for lenses, residual aberrations and alignment problems in the optical system are removed, addressing a key need in overlay metrology.

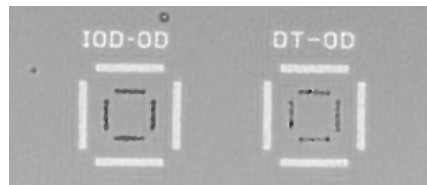
Both phase and amplitude data are obtained, providing clear contrast on features that show little or no visibility using conventional techniques, including buried features.

Post-acquisition processing enables focussing on deep overlay target features with no further mechanical movement.

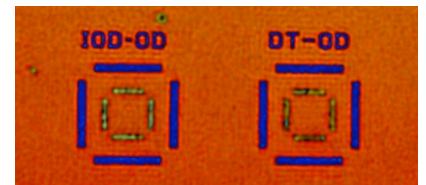
The system is also easy to integrate into existing microscopy systems, making upgrading current equipment straightforward.



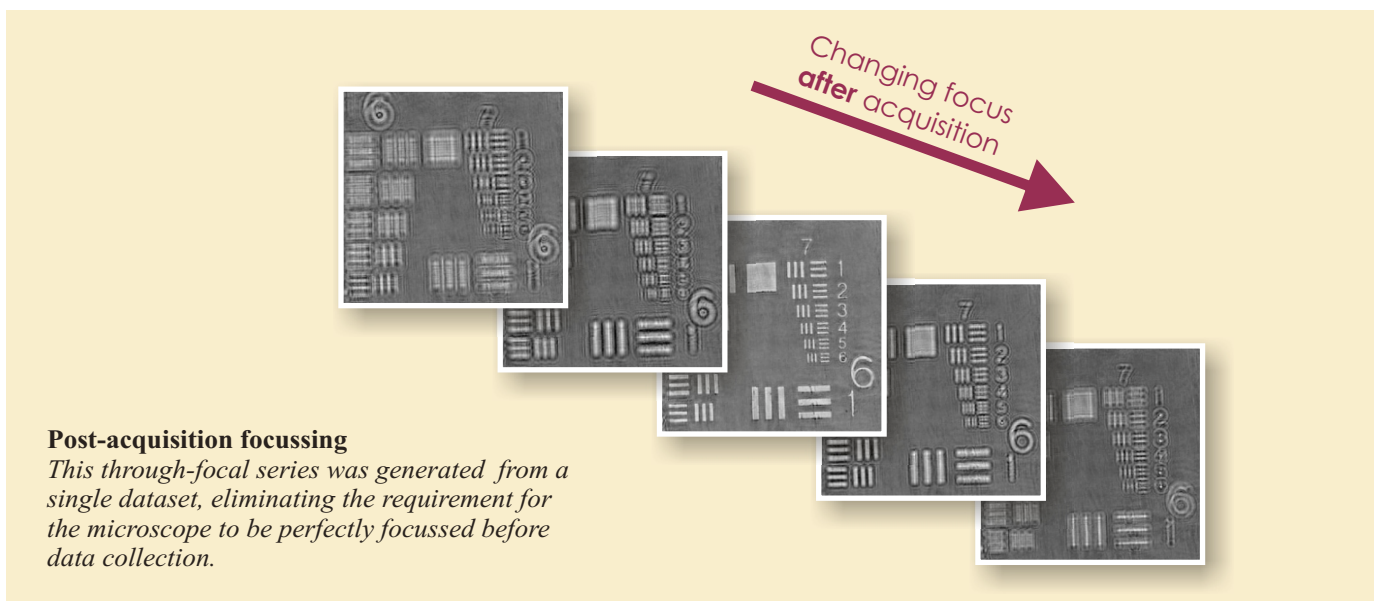
Amplitude



Phase



Combined amplitude and phase



Post-acquisition focussing
This through-focal series was generated from a single dataset, eliminating the requirement for the microscope to be perfectly focussed before data collection.