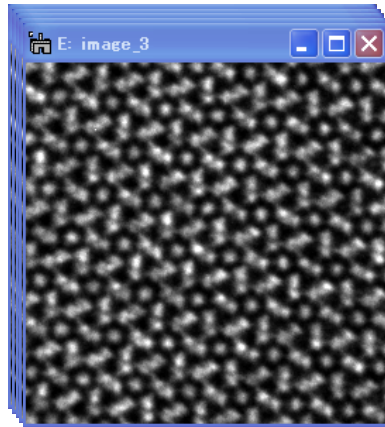
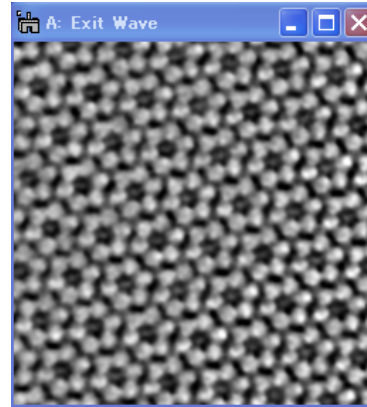


Iterative Wave Function Reconstruction

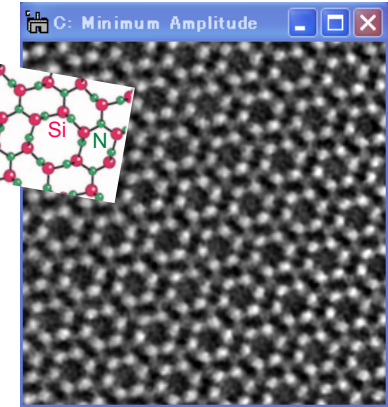
Exit Wave Reconstruction and Cs-Correction Software



Five through-focal images of silicon nitride



Phase of the reconstructed complex wave at the nominal zero-defocus (nominal exit surface).



Phase of the wave at the plane where amplitude contrast gives the minimum variation. (red) silicon; (green) nitrogen

IWFR works with a through focal series of HREM images to reconstruct a wave function at the specimen exit surface.

IWFR employs *Gerchberg-Saxton-type* iteration developed by Les Allen et al. using only image intensities [1].

- Key Features**
- ◆ Reconstructs an exit wave from as few as *five* images.
 - ◆ Compensates for spherical aberration providing more quantitative information.
 - ◆ Makes more quantitative structure analysis possible.

Reference: [1] L.J. Allen, W. McBride, N.L. O'Leary, M.P. Oxley: Exit wave reconstruction at atomic resolution; *Ultramicroscopy* 100 (2004) 91-104
 [2] K. Ishizuka: Phase retrieval from image intensities: Why does exit wave restoration using IWFR work so well?; *Microscopy*, in press (2013).

Credits: Silicon Nitride Images were taken with a Philips CM300/FEG/UT at NCEM using a Gatan GIF (Courtesy of Christian Kisielowski)