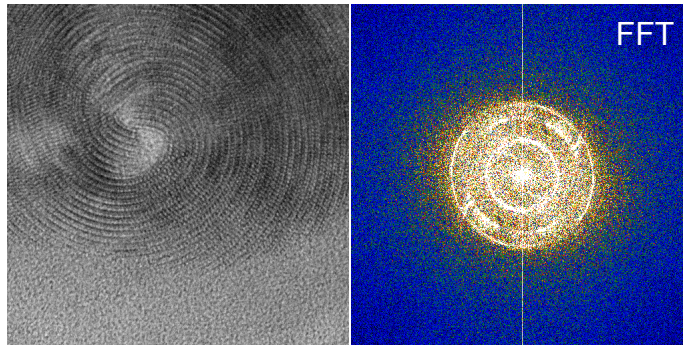
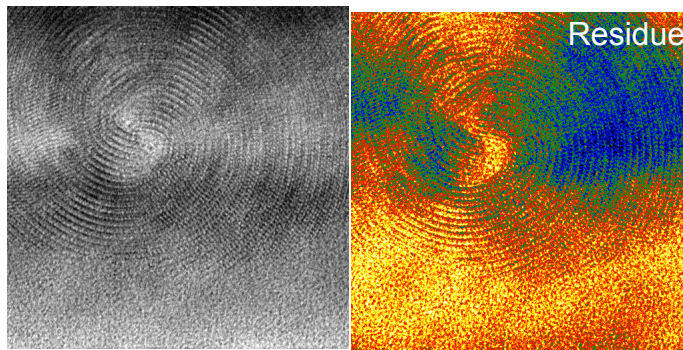


HREM-Filters Pro/Lite

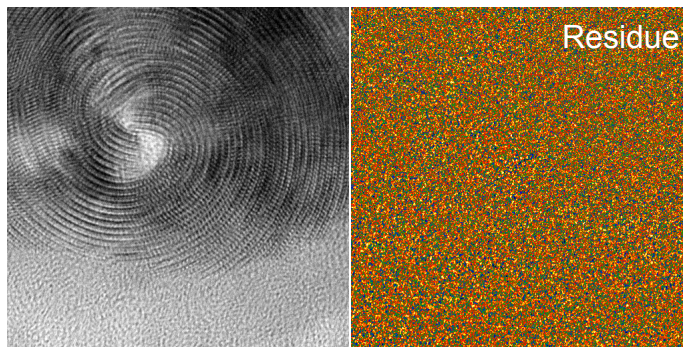
Optimal Noise Filters for high-Resolution Electron Microscopy



Original image (cryotile) and its Fourier transform



Radial background Wiener filtered image and its residue



Local 2D background Wiener filtered image and its residue

HREM-Filters are sophisticated Wiener and Difference filters that works even for non-ideal crystals, such as a nano-crystal or cylindrical crystal.

HREM-Filters Lite can be downloaded free of charge from our web site: www.hremresearch.com.

Key Features

- ◆ Uses smoothed two-dimensional background [2].
- ◆ Uses locally estimated backgrounds [3].
- ◆ Trend-subtraction
- ◆ Optimal periodic Wiener filter using accurate base vectors.

(middle row) Wiener filter based on a radial background [1] does not work for a cryotile image, and substantial features are left behind in the residue.

(bottom row) Wiener filter based on local two-dimensional backgrounds extracts all the structure information, and the residue (a difference between the filtered and original images) is featureless.

References:

- [1] R. Kilaas, *J. Microscopy* 190 (1997) 45-51.
- [2] P.H.C. Eilers et al, *Computational Statistics and Data Analysis* 50 (2006) 61-76.
- [3] T. Kogure, P.H.C. Eilers and K. Ishizuka, *Microscopy and Analysis* 22 Nov. (2008) S11-S14.

Credits: Cryotile image courtesy of Prof. Toshihiro Kogure.