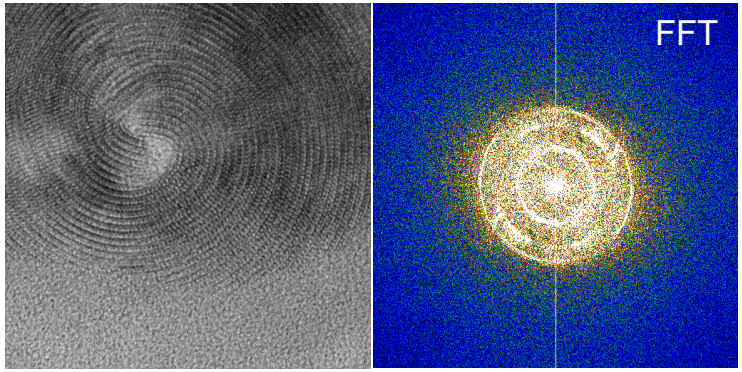
Filters

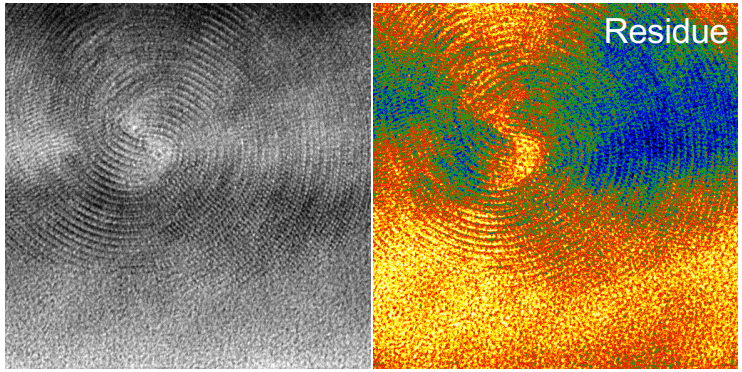
DigitalMicrograph Plug-in

HREM-Filters Pro/Lite

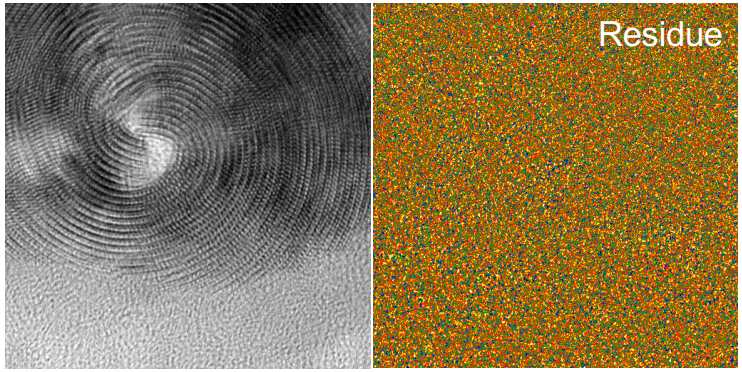
Optimal Noise Filters for high-Resolution Electron Microscopy



Original image (crysotile) 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 filters that works even for non-ideal crystals, such as a nano-crystal or cylindrical crystal.

Another feature of HREM-Filters is up-sampling that allows you to acquisition an image at a lower magnification.

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

Realtime module (Optional) performs up-sampling noise filter in live, and reveals the sample structure even from a single frame at extremely low dose.

Key Features

- Uses smoothed two-dimensional background [2].
- Uses locally estimated backgrounds [3].
- Trend-subtraction
- Realtime/offline up-sampling

(middle row) Wiener filter based on a radial background [1] does not work for a crysotile 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 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: Crysotile image courtesy of Prof. Toshihiro Kogure.