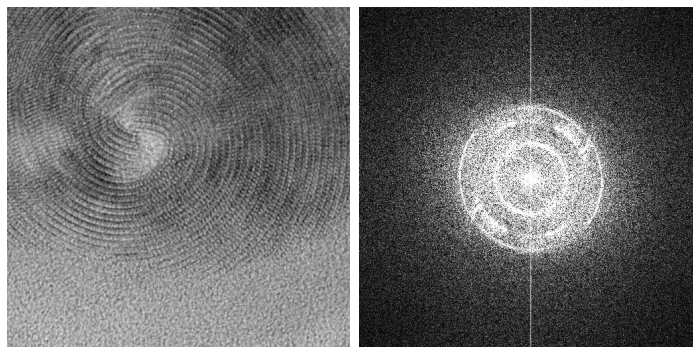
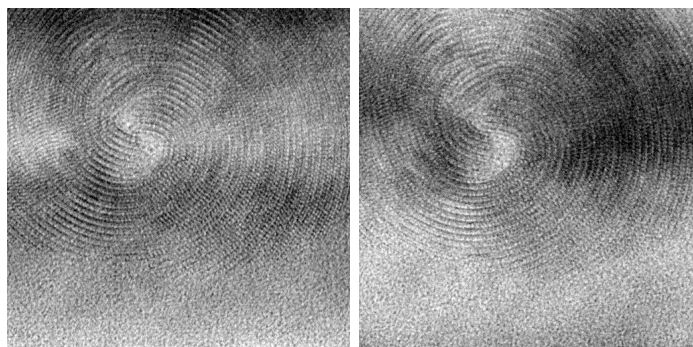


# HREM-Filters Pro/Lite

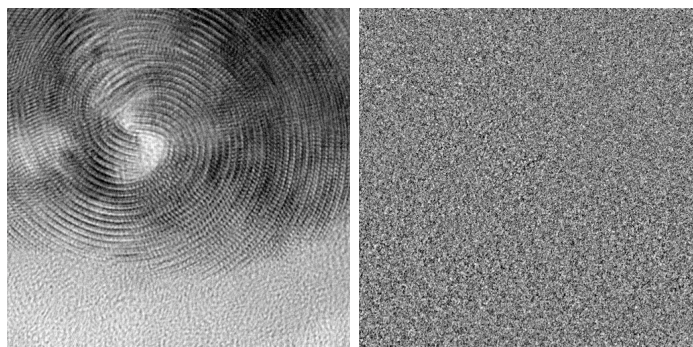
*Optimal Noise Filters for high-Resolution Electron Microscopy*



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 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](http://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 crysotile image, and substantial features are left behind.

(bottom row) Wiener filter based on local two-dimensional backgrounds extracts all the structure information, and 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] P.H.C. Eilers and K. Ishizuka, IMC16, Sapporo, (2006) 964.

**Credits:** Crysotile image courtesy of Toshihiro Kogure.