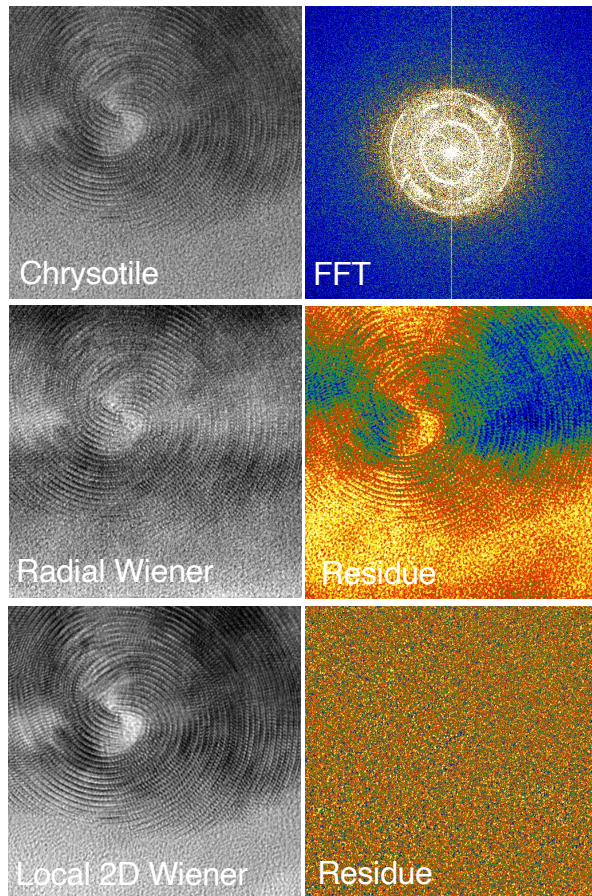


HREM-Filters Pro/Lite

Optimal Noise Filters for high-Resolution Electron Microscopy



Credits: courtesy of Prof. Toshihiro Kogure.

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

Another feature of HREM-Filters is a *up-sampling filter* that allows you to acquire TEM images from a larger area at a lower magnification using the same camera.

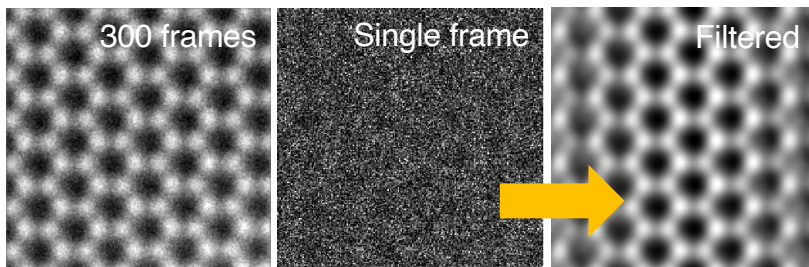
HREM-Filters Lite can be downloaded free of charge from our web site: www.hremresearch.com.

Key Features

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

← Chrysotile: The residue of Radial Wiener filter [1] shows substantial structure information. Contrary, Local 2D Wiener filter extracts almost all the information, and thus the residue is featureless.

Realtime module (Optional) performs up-sampling noise filter in live, and reveals the sample structure even from a single frame at extremely low dose [4].



← Graphene: Crystal structure can be clearly observed even from a single frame, which is comparable with a 300-frame image on the left.

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.
- [4] A. Ishizuka and K. Ishizuka, *Microscopy Today* 33 May (2025) 28-32.