

F2: Improved EELS



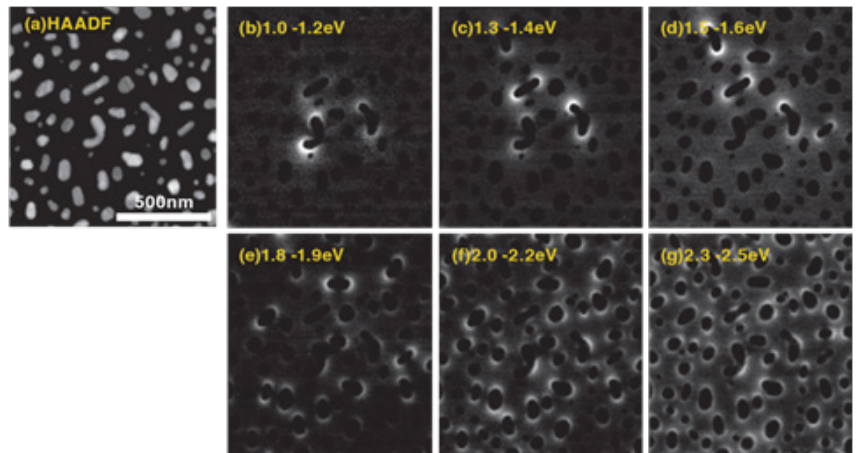
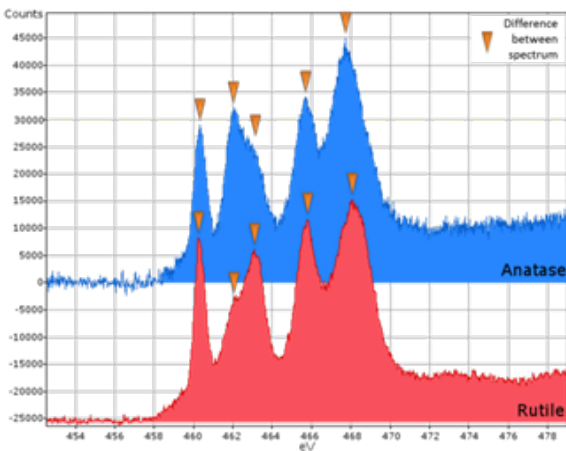
The F2 is a new concept of 20-200kV TEM equipped with a Cold FEG. This new generation of multi-purpose electron microscope is designed specifically to meet today's diversified needs.

Thanks to the high brightness and small probe size of the Cold FEG, the F2 is able to reach an unprecedented guaranteed resolution for STEM (0.14nm), EDS (1.7sr) and EELS (0.3eV) at the same time; creating a new class of high-end non-corrected TEM.

Electron Energy Loss Spectroscopy (EELS) is a very powerful technique to characterize materials and especially light elements. The improvement of EELS study is greatly dependent on the TEM performance.

The F2 with Cold FEG dramatically improves the EELS energy resolution. In particular ELNES (Energy-Loss Near-Edge Structure) exhibits a characteristic shape depending on the chemical bonding states in a substance. The small probe size obtainable with Cold FEG improves the F2 resolution, allowing the acquisition of atomic EELS maps.

Coupled with the Cold FEG and the F2's new DeSCAN system, wide area HAADF images can be analyzed with high energy resolution EELS, such as for surface plasmon resonance.



Comparison of ELNES of TiO₂

Surface plasmon resonance on Ag nanoparticles
Courtesy of Dr. T. Sannomiya - Tokyo Institute of Technology