

TEM AutoTune Software

Model 700.90P

Are you concerned that your transmission electron microscope (TEM) is not in optimized condition? Do you wish your CCD camera could automatically set its exposure to record the best possible images? Do you wish you could automatically stitch many frames of digital images together to increase the resolution and field of view? Do you wish taking perfect digital images was as easy as a few mouse clicks?

The solution is TEM automation software. With simplicity and effectiveness in mind, this automation software is designed to enhance the user's experience in recording high quality images with CCD cameras by performing these single button operations:

- Automatic TEM tuning (focus, stigmatism, and beam alignment)
- Automatic exposure
- Automatic image montage

With as few as 3 clicks of a mouse, you can obtain the perfect digital image under optimized conditions from your TEM

Principle

The automatic TEM tuning procedures are based on the accurate measurement of image shift as induced by an intentional beam tilt (shown) or focus change. The image shift is seen to be proportional to both the intentional beam tilt (θ) and defocus value (small angle approximation).

By measuring the image shift vectors (amplitude and direction) as induced by the intentional beam tilt, the values of both defocus and astigmatism can be determined. Similarly, by measuring the image shift as a result of intentional defocus change, misalignment (to the image rotation center) can be determined.

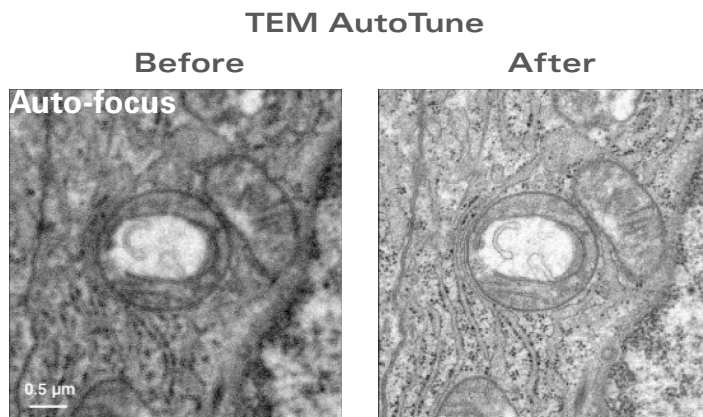
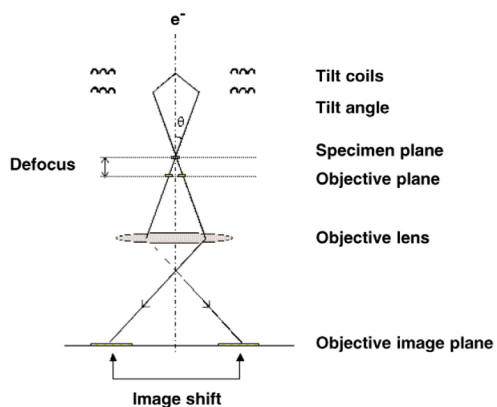


Figure 1. Mouse testis: No matter what the initial focus setting is (over or under), auto-focus always sets the focus to the correct value.

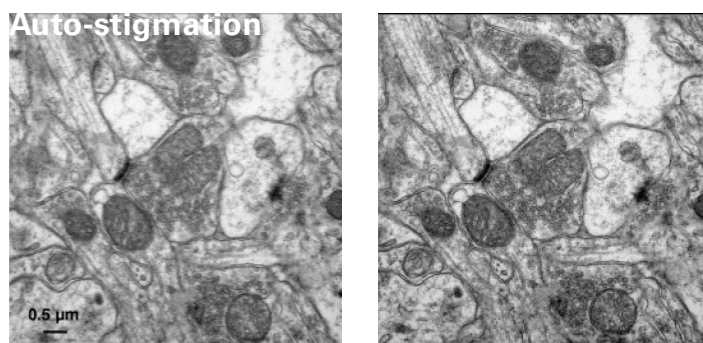


Figure 2. Mouse hippocampus: More image details can be seen after auto-stigmatism.

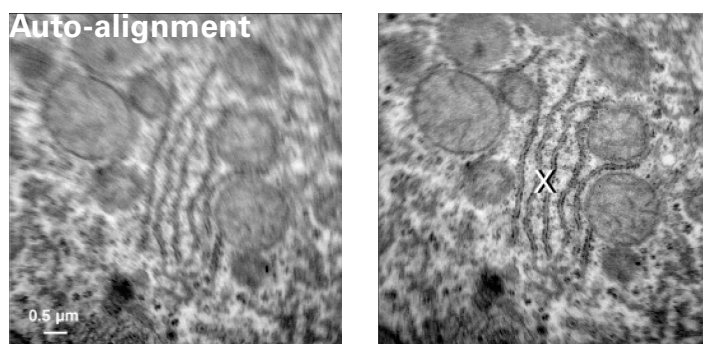


Figure 3. Rat liver: Left image rotation center is out of the field of view (misalignment); right rotation center (X) is approximately at the image's center (aligned). *Sample courtesy Mr. Y. Satoh, JEOL Ltd.*

Applications

- Life science
- Material science
- Natural resources
- Electronics

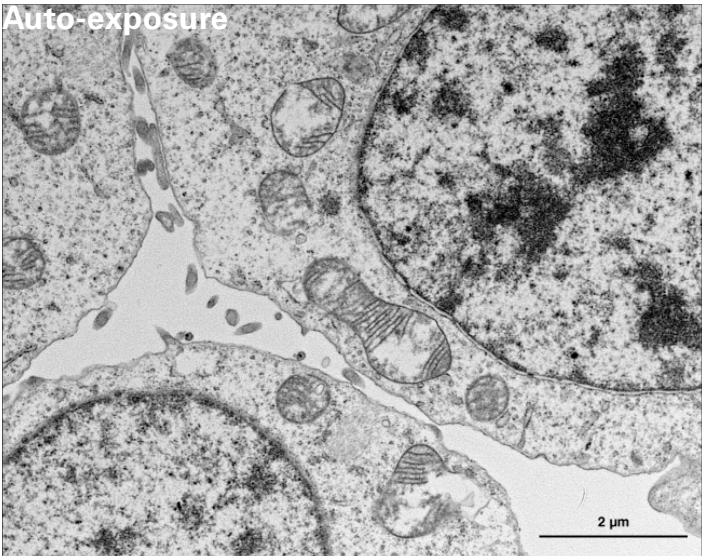


Figure 4. Tissue culture cells infected with HIV virus: Image was captured by CCD camera with exposure automatically determined from the illumination condition in the TEM.

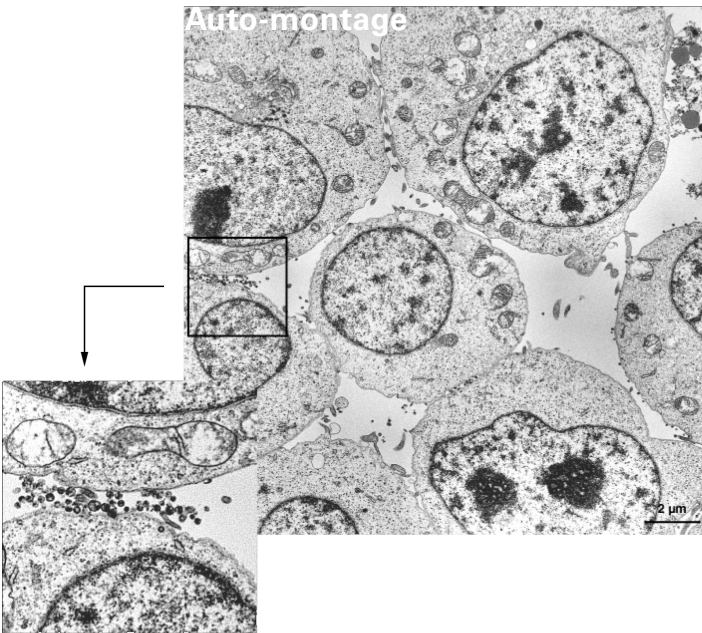


Figure 5. Tissue culture cells infected with HIV virus: Images were automatically acquired from the TEM and then seamlessly joined to form a montage of a very large field of view.

Images courtesy Mr. Andy Yarwood of JEOL UK. Sample courtesy of Queen Charlotte's Hospital, London.

Ordering

Model	Description
TEM AutoTune software from Gatan works with DigitalMicrograph® software and requires functional RS232 serial interface or equivalent on TEM	
700.80P	DigitalMontage® software
700.90P	TEM AutoTune software
700.90T1	TEM AutoTune software installation and training if ordered with CCD camera
700.90T2	TEM AutoTune software installation and training if ordered at a later date