

## ***HT7830 UHR 120kV TEM with STEM, Diffraction and EDS***

The NEW Hitachi HT7830 UHR 120kV TEM joins the instrumentation fleet at Clemson AMRL. Procuring the very **first unit in the US** of this innovative technology, the EM Facility at AMRL is at the very cutting edge of modern EM technologies to serve a diverse array of research.

This is the latest and Hitachi's most advanced TEM designed to operate tunable accelerating voltage range of 20 kV-120 kV. This microscope incorporates Hitachi's Dual-mode objective lens technology that allows users to image their specimens in a variety of conditions such as low magnification, wide-field high contrast, high resolution, and more—all in one microscope. Several advanced features like advanced stage navigation, automated image stitching, 3D tomography are available. The microscope also comes with large area X-ray detector to chemically analyze specimens. This TEM can achieve a resolution of 0.14 nm at 120 kV which is enough to image material lattice and atomic imaging. Images can be recorded at maximum magnification up to x1,000,000.

Generally low kV tunable energy TEMs are highly useful for biological materials, polymers and sensitive samples where surface damage from high energy e-beams can be minimized by energy tuning.

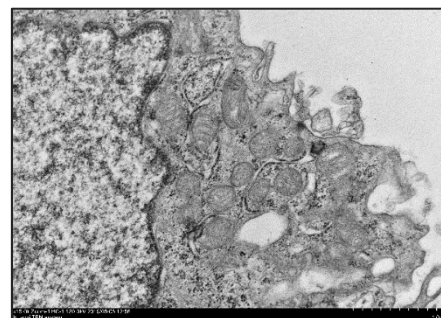
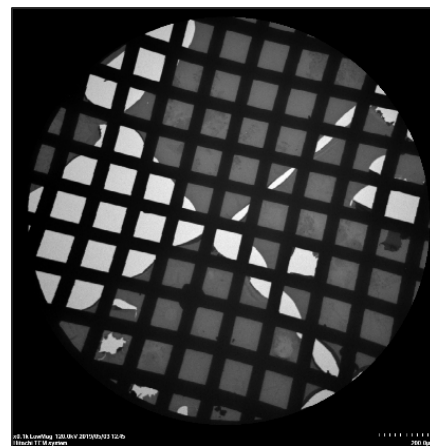
This advanced TEM will allow users to study their material at the nanometer scale. Users from academia and industry from a variety of disciplines are expected to benefit from this advanced TEM.

### **HT7830 UHR 120 kV Transmission Electron Microscope**

The HT7800 series has been developed to meet the requirements to analyze low density soft materials from biological samples to polymers as well as nanomaterials. The HT7800 series is a modern digital TEM equipped with a navigation screen camera and a Hitachi's unique dual-mode objective lens. Within HT7800 series, HT7830 is designed for ultra-high-resolution mode.

*Model HT7830 Ultra High Resolution (UHR) 120 kV Transmission Electron Microscope features:*

- Modern design digital TEM that does not have binoculars or a film chamber



- Next generation high speed CMOS viewing / navigation screen camera
  - 120 kV maximum acceleration voltage, with guaranteed operation starting from 20kV variable in 100 V preset steps
  - Magnification range from x100-x1,000,000
  - Hitachi's unique "Dual Mode" compound objective lens provides both high contrast and high resolution (HC/HR) modes exchangeable by one selection in the software.
- Changing modes does not require exchanging pole pieces
- Pneumatic Gun Lift and automated venting procedure for filament exchange
  - Integrated high vacuum gauge and gun valve
  - Includes External LAN control and SAED aperture assembly
  - Includes LaB6 filament system
  - Includes pneumatic beam stop
  - Includes oil-free pre-pumping system and TEM adapter kit
  - Independent free lens control
  - Eucentric motorized high performance stage 5-axis goniometer for ultra-stable operation and tilting
  - Microprocessor-controlled, differential turbo molecular pump evacuation system to guarantee fast pump-down times and an ultra-clean column vacuum
  - Automatic brightness, focus and drift correction included depending on camera option
  - Advanced image navigation and storage of positions, tilt angles and orientations
  - Microtrace function indicating examined and unexamined areas of the specimen
  - EMIP software to automatically archive all saved images and imaging data for ease of access/analysis

Includes:

1. OXFORD EDS system- AZtecEnergy TEM STD Microanalysis System with X-Max 80T large area Analytical Silicon Drift Detector (SDD) for Transmission Electron Microscopes

A comprehensive Energy Dispersive X-ray Microanalysis system including all the tools required to perform qualitative and quantitative analysis.

Software includes:

- Software Suite
- AZtec analyzer
- AZtec Point & ID
- AZtec Mapping
- AZtec Linescanning
- AZtec AutoLock - Includes SITELOCK Beam Drift Correction
- AZtec AutoLayer -(Includes INCAEnergy Cameo+)
- IncaEnergy TEM Mapping Navigator
- TEM Analyser Navigator
- IncaEnergy TEM Point and ID Navigator
- SITELOCK Beam Drift Correction
- INCAEnergy Cameo+
- Microsoft Office for report generation
- Additional license for off-line processing

Hardware includes:

- X-Max TEM 80T SDD detector with 80mm<sup>2</sup> active area and resolution guarantee of 127eV
- SATW window for detection of elements from Be - Am
- Liquid nitrogen-free system
- Xstream2 - Microanalytical Pulse Processor
- Windows 7 PC
- 23 inch Widescreen LCD display

## 2. AMT NanoSprint43 high definition 43mp CMOS camera

- 43mp CMOS, 7915x5436 pixel sensor
- 5.5um pixel size
- AMT custom high MTF B lens
- Lens MTF at Nyquist: > 60%
- 8 fps Display Image
- UL, CE, RoHS
- Win 7/10 Pro 64 bit

## 3. Other items

HT7830 STEM (BF/DF) Unit 60Hz

HT7800-SS Single Tilt Holder

HT7800-SS2 One Touch Single Specimen Holder

Haskris Air-cooled Water Recirculator Model LX2 (LX2-A2)

Cold Finger

Nano Analysis Function

HT7800-EA X-ray Analysis Holder

