



# ARA-TEM 80

*Aimed for:*

*Bio, Medical Science, Material Science & Engineering Applications*

*ARA-TEM high-level technology and stability permits a full range of various applications*

*The ARA-TEM 80 transmission electron microscope (TEM) is tailored for use in:*

*Protein and cellular imaging*

*Topographical and morphological information*

*Crystalline structures*

*Biological studies*

*Characterization of shape and size of nanostructured materials*

*Study on multiphase and compound materials*

*Study on structural defects and porosity*

## KEY FEATURES

*High contrast imaging*

*Electron accelerating voltages of 50 kV & 80 kV*

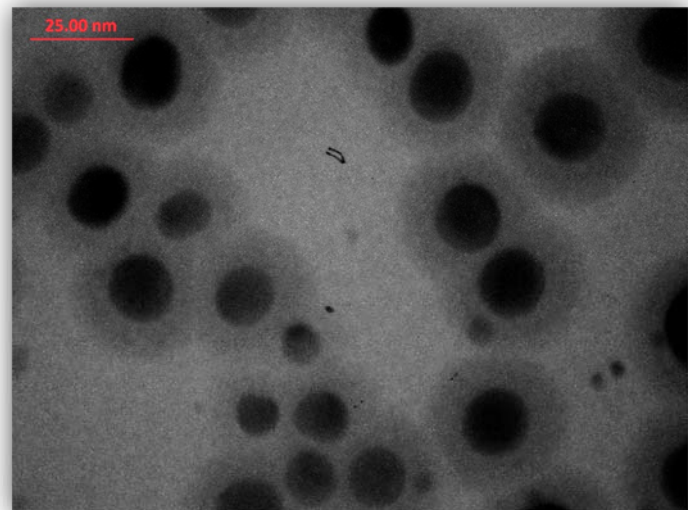
*High quality imaging of biological specimens.*

*Motorized and robust control of apertures*

*Motorized X-Y specimen stage*

*Thermionic tungsten electron source*

*Top entry sample holder*

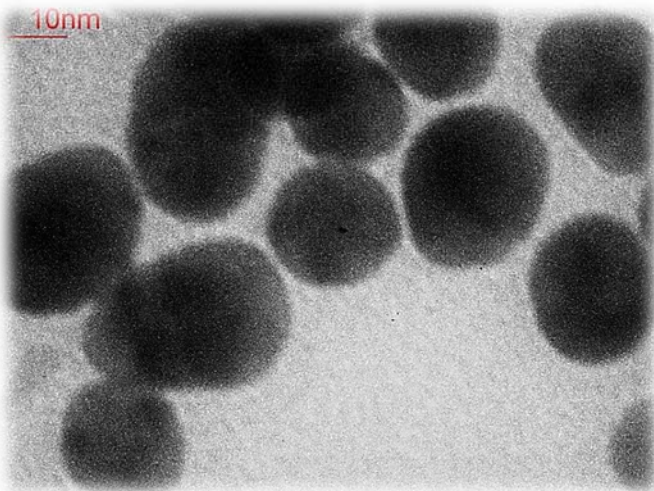


↑ *Ferritin Standard gratings, Ted Pella, INC.*

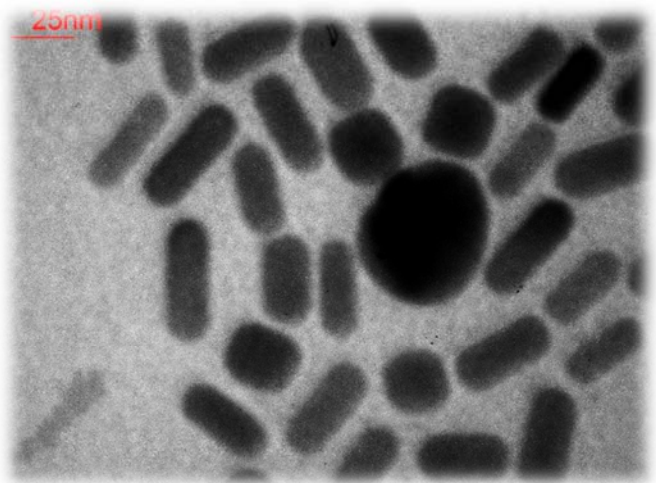


↑ *ARA-TEM main control unit panel*

← *ARA-TEM full system*



↑ *ARA-TEM image of nanoparticles*



↑ *ARA-TEM image of nanorods*

## Specifications

<b>Resolution (nm) at 80 kV</b>	
<b>Point</b>	<b>0.50 nm</b>
<b>Lattice</b>	<b>0.34 nm</b>
<b>Acceleration voltage</b>	
<b>Range</b>	<b>50kV, 80kV</b>
<b>Stability</b>	<b><math>8 \times 10^{-6}</math></b>
<b>Magnification</b>	
<b>Range</b>	<b>150X to 400,000X</b>
<b>Steps</b>	<b>16</b>
<b>Diffraction</b>	
<b>Selected area</b>	<b>&gt;1.5 <math>\mu\text{m}</math> diameter, selected apertures (SAD)</b>
	<b>&gt;3 <math>\mu\text{m}</math> diameter, selected by micro-beam illumination</b>
<b>Illumination system</b>	
<b>Electron gun</b>	<b>Pre-centered tungsten hairpin filament</b>
<b>Beam alignment</b>	<b>Electromagnetic beam alignment system</b>
<b>Double condenser</b>	<b>Factory aligned double condenser system specimen</b>
	<b>Illumination adjustable from 3<math>\mu\text{m}</math> to 2mm diameter</b>
<b>Objective lens</b>	
<b>Focal length</b>	<b>2.6mm</b>
<b>Spherical aberration</b>	<b>2.2mm</b>
<b>Chromatic aberration</b>	<b>1.7mm</b>
<b>Astigmatism</b>	<b>&lt;1 <math>\mu\text{m}</math></b>
<b>Projector lenses</b>	
<b>Number of lenses</b>	<b>3 factory aligned electromagnetic projector lenses</b>
<b>Stability</b>	<b><math>6 \times 10^{-6}</math></b>
<b>Vacuum System</b>	
<b>Vacuum pumps</b>	<b>Rotary and turbo molecular by Leybold GmbH</b>
<b>Vacuum gauge</b>	<b>Pirani and cold cathode by Leybold GmbH</b>
<b>Vacuum pressure</b>	<b>High vacuum pressure down to <math>10^{-6}</math> mbar</b>
<b>Movements</b>	
<b>X-Y sample movement</b>	<b>Motorized</b>
<b>Sample tilt</b>	<b>Optional (details can be customized)</b>
<b>Apertures</b>	<b>Motorized</b>
<b>Software</b>	
<b>Imaging</b>	<b>Available</b>
<b>Image processing</b>	<b>Available</b>
<b>Apertures control</b>	<b>Available</b>
<b>X-Y sample control</b>	<b>Available</b>

## **Installation requirement**

- **Environment temperature: 17 °C to 24 °C**
- **Weight distribution maximum: 1400 kg/m<sup>2</sup>**
- **Electrical connection: fixed connection to 3, 2 or single phase lines**
- **Power voltage: 220 V (+10 %, -15%)**
- **Frequency: 50 or 60 Hz**
- **Power consumption: 4.5 kVA , Full options 5.5 kVA**
- **Electrical connection: single phase for water cooler 220 V**
- **Cooling water required (depends on water cooling unit ordered)**
- **Double earth connection required**
- **Nitrogen (N<sub>2</sub>) supply with pressure of 0.2 bar**
- **Pre-vacuum pump outlet**
- **Liquid nitrogen LN<sub>2</sub>**
- **LAN connection for Remote Access Program for Interactive Diagnosis (RAPID)**
- **Door height: 2.20 meter**
- **Door width: 1.10 meter**
- **Ceiling height: >2.90 meter**
- **Floor space required for operation and servicing 5 meter × 6 meter**

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