These images were prepared as part of the class MCR 485/683 Transmission Electron Microscopy at SUNY College of Environmental Science and Forestry, Spring 2019.

All images were acquired on the JEOL JEM 2100F Transmission Electron Microscope in the N. C. Brown Center for Ultrastructure Studies.
Images of Biological and Materials Samples

This portfolio includes a set of micrographs from lab sessions demonstrating proper specimen preparation and imaging.

**Biological**
- Mouse Kidney
  - Fixed in glutaraldehyde and osmium tetroxide
  - Embedded in Araldite
  - Stained with uranyl acetate and lead citrate

**Materials**
- Silver Nanopowder
- Copper Nanopowder
  - 1 mg/mL suspension of nanopowder in deionized water, sonicated for 30 minutes
  - 1 drop of nanopowder suspension evaporated onto Formvar coated grid
Figure 1. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 8kX. This micrograph features mitochondria (M), and a leukocyte (B) within a capillary blood vessel (C). Bar=1 µm
Figure 2. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 8kX. This micrograph features an erythrocyte (E) and a thrombocyte (P) within a capillary (C). Bar=1µm
Figure 3. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 8000X. This image features a cell nucleus. The nucleolus ($\textit{Nu}$), nuclear membrane ($\textit{M}$), a nuclear pore ($\textit{P}$), heterochromatin ($\textit{HC}$), and euchromatin ($\textit{EC}$) are labelled. Bar=1 µm
Figure 4. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 12kX. This image features a cell nucleus. The nucleolus (\(Nu\)), nuclear membrane (\(M\), and heterochromatin (\(HC\)) are labelled. Bar=1000nm
Figure 5. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 6000X. This image features a capillary blood vessel (C), a renal filtration membrane (F), and several mitochondria (M). Bar=2µm
Biological

Figure 6. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 12kX. This image features several mitochondria (M) within renal filtration membranes. Bar=1000nm
Figure 7. Transmission electron micrograph of mouse kidney tissue. Thin sections were stained with uranyl acetate and lead citrate, image was acquired with 200kV at 25kX. This image features two mitochondria ($M$) with visible cristae ($Ch$). Bar=500nm
Materials

Figure 8. Transmission electron micrograph of silver nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 15kX. This image features an overview of silver nanoparticle clusters, labelled $Ag$. Bar=500nm
Materials

Figure 9. Transmission electron micrograph of silver nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 100kX. This image features an overview of a single cluster of silver nanoparticles, labelled \textit{Ag}. Atomic lattice moire pattern labelled \textit{ML}. Bar=200nm
Materials

Figure 10. Transmission electron micrograph of silver nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 150kX. This image features an overview of a single silver nanoparticle, labelled $\text{Ag}$. Bar=50nm
Materials

Figure 11. Transmission electron micrograph of silver nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 1.2MX. This image features atomic lattice resolution of a single silver nanoparticle, labelled Ag (approximate diameter 24nm). Atomic lattice labelled Lat. Bar=10nm
Figure 12. Transmission electron micrograph of silver nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 1.2MX. 100% crop of Figure 9 depicting resolution of the atomic lattice structure.
Figure 13. Transmission electron micrograph of copper nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 200kX. Image depicts copper particles (Cu) encased in poly(vinyl alcohol) dispersant (PVA). Bar=50nm.
Figure 14. Transmission electron micrograph of copper nanopowder. Grids were prepared by evaporation of a drop of 1mg/mL suspension of nanopowder in deionized water. Image was acquired with 200kV at 800kX. Image depicts copper particles (Cu) encased in poly(vinyl alcohol) dispersant (PVA). Bar=10nm.