

NANO 703/703L – Fall, 2016 (4 cr.)

Instrumentation & Characterization of Nanomaterials

Instructor: S. P. Ahrenkiel
Email: Phil.Ahrenkiel@sdsmt.edu

Office: EP 221
Phone: 605-394-5238

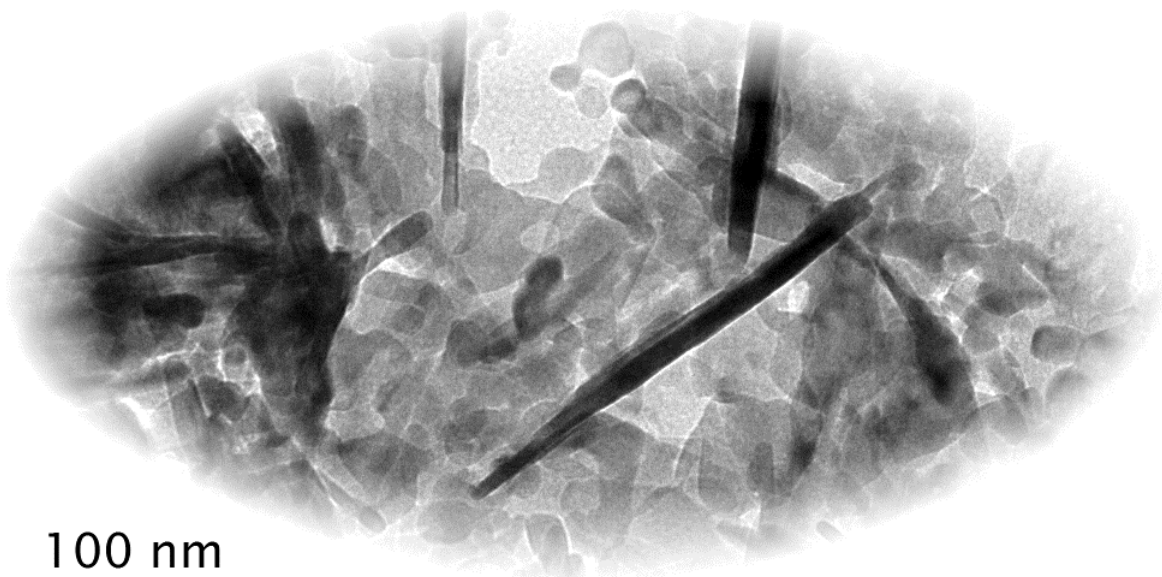
Starting Date: Mon., Aug. 22, 2016

NANO 703: Discussion/Recitation
Time: M,W,F 10:00-10:50 AM
Location: EP 251A

NANO 703L: Laboratory (Times and locations TBD)

Text: Transmission Electron Microscopy
D. B. Williams & C. B. Carter, 2nd Ed. (Springer, 2009)

Description: Experimental nanoscience requires the use of instruments and techniques that can reveal quantum-mechanical phenomena in materials and resolve structural features as small as 1 nm (10^{-9} m). This course will be a hands-on exploration of some of the most important, state-of-the-art tools for nanocharacterization, including electron microscopy, X-ray diffraction, atomic-force microscopy, and optical spectroscopy. Experience with these methods is an asset to any aspiring nanoscientist. Students will be trained in sample preparation, instrument operation, and data acquisition and interpretation. Topics will include electron optics and image formation, beam-specimen interactions, diffraction and crystallography, 3-D reconstruction, and optical signatures of nanomaterials.



Prerequisites: Graduate standing. Interested undergraduate students should contact the instructor.