

## CHEMISTRY 450/600G NANOCHEMISTRY

**Lecture:** 12:30-1:45 p.m., TuTh; John E. La Tourette Hall 201

Spring 2010

**Text/References:**

1. "Nanotechnology: A Chemical Approach to Nanomaterials", by G. A. Ozin, A.C. Arsenault, and L. Cademartiri, The Royal Society of Chemistry, Cambridge, 2<sup>nd</sup> Ed., 2009 (suggested text)
2. "Nanostructures & Nanomaterials: Synthesis, Properties, and Applications", by Guozhong Cao, Imperial College Press, London, 2004 (suggested reference)
3. "Nanoscale Science and Technology", Edited by R. W. Kelsall, I. W. Hamley, and M. Geoghegan, Wiley, West Sussex, 2005 (suggested reference)
4. "Introduction to Sol-Gel Processing", by Alain C. Pierre, Kluwer Academic Publishers: Boston, 1998 (suggested reference)

**Instructor:** Dr. Chhiu-Tsu Lin, FW 323; Tel. 753-6861; e-mail: [ctlin@niu.edu](mailto:ctlin@niu.edu)

**Office Hours:** 11:00-11:50 a.m., TuWTh; or by appointment

### TENTATIVE LECTURE SCHEDULE

<u>Week</u>	<u>Topics</u>	<u>Exam</u>
Jan. 11-15	Nanotech: What is Nano/Nanotechnology? What do we care about Nano?	
Jan. 18-22	Nanoscience: Size matters – A different kind of small <b><u>Jan. 18 Martin Luther King, Jr. Birthday</u></b>	
Jan. 25-29	The fundamental science behind Nanotechnology	
Feb. 1-5	Physical chemistry of solid surfaces: Surface energy	
Feb. 8-12	Physical chemistry of solid surfaces: Stabilization of Nanostructures	
Feb. 15-19	Tools of the Nanoscience: Tools for measuring Nanostructures	
Feb. 22-26	Tools of the Nanosciences: Tools to make Nanostructures	<b>Exam #1 (2/25)</b>
Mar. 1-5	Sol-gel chemistry and processing of nanomaterials <b><u>Spring Break: March 7-14</u></b>	
Mar. 15-19	Sol-gel chemistry and processing of nanostructures	
Mar. 22-26	Zero-Dimensional Nanostructures: Nanoparticles	
Mar. 29-Apr.2	Zero-Dimensional Nanostructures: Nanoparticles	
Apr. 5-9	One-Dimensional Nanostructures: Nanowires and Nanorods	
Apr. 12-16	Special Nanomaterials: Carbon Nanotubes and organic-inorganic hybrids	
Apr. 19-23	Two-Dimensional Nanostructures: Thin films	<b>Exam #2 (4/22)</b>
Apr. 26-30	Applications of Nanomaterials: Sensors, Nanocoatings for in-mold decoration technology, Biomedical, Optics and Electronics	
		(Apr. 30, Friday: Reading day)

**Final Exam: Thursday, May 6, noon-1:50 p.m. (Research papers, reports, and presentations)**

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<b>Grading:</b> Homework/Mini hand-on research Reports	30%
Hour Exams	40%
Final Exam: Hand-on and literature research papers, reports, and presentations	30%

**Grading Scale:** >90% = A, 80-89% = B, 70-79% = C, 60-69% = D, < 59% = F