

Chemistry 353h
Topics in Materials Science
Spring 2009

Lectures: MWF 9:30 – 10:30, L209

Course Instructor:

Alex Norquist

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Course Materials:

There is no text for this course. We will make extensive use of the primary literature. Electronic copies of all papers to be discussed will be placed on Blackboard.

Course focus:

This course will be focused upon the use of functional materials in the context of energy related research. The topics listed below will be discussed using the follow readings:

1. Dye sensitized solar cells (Gratzel *Nature* **2001**, 414, 338)
2. Hydrogen storage media, including metal organic frameworks and complex hydrides (Schlapbach *Nature* **2001**, 414, 353; Yaghi *Angew. Chem. Int. Ed.* **2005**, 44, 4670; Jensen *Chem. Rev.* **2007**, 107, 4111).
3. Hydrogen fuel cells (Kenis *Langmuir* **2007**, 23, 6871)
4. Thermoelectrics (Kauzlarich *Dalton Trans.* **2007**, 21, 2099; Synder *Nature Materials* **2008**, 7, 105).
5. Light emitting diodes (Yang *Appl. Phys. Lett.* **2007**, 90, 123503; Marks *Acc. Chem. Res.* **2005**, 38, 632).

Problem Sets. Three or four problem sets will be assigned during the quarter. Late work will be penalized 10 % per day.

Presentations: Each student will present a 45 minute presentation. Topics will be selected from the many classes of functional materials, and be based upon current literature examples. Topics must be approved by April 6th.

Grading. The course grade be determined from performance on the two problem sets, the Powerpoint presentation and class participation

Problem Sets	50 %
Presentation	30 %
Participation	20 %

Students who think they may need accommodations in this course because of the impact of a disability are encouraged to meet with me privately early in the semester. Students should also contact Rick Webb, Coordinator, Office of Disabilities Services (rwebb@haverford.edu, 610-896-1290) to verify their eligibility for reasonable accommodations as soon as possible. Early contact will help to avoid unnecessary inconvenience and delays.