Chemistry 160:477/577

SOLID STATE CHEMISTRY

Syllabus

Instructor   Prof. Jing Li (Rm. 3104, Chemistry and Chemical Biology Building, 445-3758, jingli@rutgers.edu

Time and Place   Tuesday/Thursday, 10:55am-12:15pm

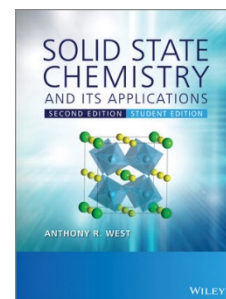**Office Hours**   Friday 10:30am-12:00pm or by Appointment

Course Website   https://sakai.rutgers.edu/portal

Sakai Helpdesk   848-445-8721 (Available 24/7), sakai@rutgers.edu

Text and Reference Books:

Textbook:
- A. R. West: Solid State Chemistry and Its Applications (2nd Ed, Student Edition, Wiley 2014, ISBN: 978-1-119-94294-8)

Reference Books:
- L. E. Smart, E. A. Moore: Solid State Chemistry: An Introduction (4th Ed., CRC Press 2012, ISBN 9781439847909)
- T. A. Albright, J. K. Burdett and M.-H. Whangbo: Orbital Interactions in Chemistry (2nd Ed, Wiley & Sons 2013, ISBN: 978-0-471-08039-8)
- S. E. Dann: Reactions and Characterization of Solids (RSC Publishing 2000, ISBN: 978-0-85404-612-6)
- A. F. Wells: Structural Inorganic Chemistry (5th Ed, Oxford University Press 1984, ISBN-10: 0198553706)
- Cheetham and Day: Solid State Chemistry: Techniques (Clarendon Press 1990, ISBN-10: 0198552866)
- Cheetham and Day: Solid State Chemistry: Compounds (Clarendon Press 1992, ISBN-10: 0198551665)
- P. A. Cox: The Electronic Structure and Chemistry of Solids (Oxford 1987, ISBN-10: 0198552041)
- Wold, Aaron, Dwight: Solid State Chemistry (Springer 1993, ISBN 978-94-011-1476-9)
- R. Hoffmann: Solids and Surfaces: A Chemist's View of Bonding in Extended Structures (Wiley-VCH 1989, ISBN: 978-0-471-18710-3)
- J. K. Burdett: Chemical Bonding in Solids (Oxford 1995, ISBN-10: 0195089928)

Learning Goals: To understand the basic concepts and principles of solid state chemistry by exploring synthesis, structure, chemical bonding, physical properties and applications of various solid materials, and to achieve a fundamental understanding of the structure-property correlation in these materials, with an

emphasis on crystalline solids. The department learning goals are met by this course.

Academic Integrity Policy:	http://academicintegrity.rutgers.edu/ http://academicintegrity.rutgers.edu/academic-integrity-policy/
Lecture Notes	Lecture notes will be posted on the course website (Sakai). Access will be provided to all students enrolled in the course.
Problem Sets	Questions will be selected from the textbook and from other sources. Problem sets will not be graded but the key to each question will be provided.
Term Paper:	Students are required to write and present a term paper on a current topic in areas of Solid State Chemistry.
Project:	Each student will perform band structure calculations of an assigned crystalline compound using selected software packages and submit results by due date.
Exams:	There will be a midterm and a final exam. Final exam date and time can be found at: http://finalexams.rutgers.edu/ or scheduling.rutgers.edu/scheduling/exam-scheduling/final-exam-schedule
Grading Policy:	Midterm Exam 30%; Final Exam 40%, Term Paper 25% (Report: 12%, Oral Presentation and Participation: 13%), Project 5%. All work must be completed by the due date to avoid reduction of credits.
Self-Reporting Absence:	Students are expected to attend all classes; if you must miss a class, please use Rutgers absence reporting website: https://sims.rutgers.edu/ssra/ to indicate the date and reason for your absence. An email will be automatically sent to me.
Resources:	http://www.wiley.com/go/west/solidstatechemistrystudent/ http://www.crystalmaker.com/ http://symmetry.otterbein.edu/ http://csi.chemie.tu-darmstadt.de/ak/immel/tutorials/symmetry/ http://www.3dchem.com/inorganic.html http://homepage.univie.ac.at/nikos.pinotsis/spacegroup.html http://firstyear.chem.usyd.edu.au/calculators/solid_state.shtml http://www.crystallographiccourseware.com/ http://rcsr.anu.edu.au/ https://crystalsymmetry.wordpress.com/230-2/ https://crystalsymmetry.wordpress.com/nets/mof-nets/