

CHEM\*4620  
Advanced Topics in Inorganic Chemistry  
**SOLID STATE CHEMISTRY**  
Fall 2017 – Course Outline

Contemporary treatment of the chemistry of solid materials. (1) Solid state structure. (2) Physical chemistry of solids. (3) Properties and applications. In addition to general knowledge on the structure and properties of solids, the students will learn how to understand the crystal structures, phase diagrams and physical properties utilized in modern applications.

**CREDIT WEIGHT** 0.5

**PREREQUISITE** CHEM\*3650 Chemistry of the Elements II.

**WEBSITE** <http://www.chemistry.uoguelph.ca/soldatov/c4620>

Course materials, detailed course contents, schedule of classes, assignment deadlines and exam dates/times.

**INSTRUCTOR** **Prof. Dmitriy Soldatov** E-mail: soldatov@uoguelph.ca  
Office: MACN-122 or 338 (x53548)  
Lab: MACN-348 or 341

<b>SCHEDULE</b>	Tue, Thu (Sep 7 – Nov 30)	13:00 - 14:20	MCKN-233
<b>OFFICE HOURS</b>	Mon	14:00 - 17:00	MACN-122 or 338
<b>FINAL EXAM</b>	Wed, Dec 6	19:00 - 21:00	TBA

**COURSE CONTENTS** **Part I: Solid state structure.** Types of solids. Crystals and crystal chemistry. Crystallinity in bulk materials.  
**Part II: Physical chemistry of solids.** Bonding and stability. Heterogeneous equilibria. Phase diagrams of one- and two-component systems.  
**Part III: Properties and applications.** Electronic structure and defects. Physical properties: electrical, magnetic, optical. Chemical reactivity in the solid state.

**EVALUATION** Total marks [100]  
Assignment 1, Exam 1 [15,20] Part I  
Assignment 2, Exam 2 [15,20] Part II  
Assignment 3, Exam 3 [ 5,25] Part III  
Late assignments are subject to 20% grade reduction per day. At least 50% of the total mark must be collected for each part in order to pass the course.

**REQUIRED TEXTS** Solid State Chemistry Lecture Notes, v.04 (available from the website) and either Solid State Chemistry and Its Applications, 2nd ed, West, Wiley, 2014 **or** Basic Solid State Chemistry, 2nd ed; West, Wiley, 2006

## GENERAL POLICIES AND REGULATIONS

E-mail Communication: As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the university and its students.

When You Cannot Meet a Course Requirement: When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Drop Date: The last date to drop the course, without academic penalty, is **3 November 2017**. For regulations and procedures for Dropping Courses, see Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments: Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility: The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student. When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway. Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day. For more information see the website: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

Academic Misconduct: The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Recording of Materials: Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources: The Academic Calendars are the source of information about the university procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:

<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>