

## Ch 102 – Course information 2010

<http://agapie.caltech.edu/#classes>

### Instructor:

Prof. Theodor Agapie

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### Teaching Assistants:

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### Textbook:

*Inorganic Chemistry*, Housecroft and Sharpe (third edition)

### Problem Sets:

Weekly problem sets will be available on-line on Friday morning and will be due on the following Tuesday, before class. Consultation of test materials from previous years is not allowed. About 20% of each problem set will consist of a short project to be selected by each student, on a compound or class of compounds from the reading. Two power point slides should be turned in as solution, including background, synthesis and reactivity, electronic structure, and application of software on an aspect of the molecule (symmetry, electronic structure, vibrational analysis, etc).

### Short Presentations:

Two short (5 minute) student presentations will be given at the beginning of each lecture starting with the second week of classes. The two slides prepared for the problem set will be used for the presentation.

### Exams:

Closed book, take-home. Consultation of test materials from previous years is not allowed.

### Office hours:

TAs: Monday, Thursday, 7-8 pm, Noyes 317; Monday, 3-4 pm, Room 220 (SFL)

Instructor: Friday, 9-10 am, Noyes 314

### Grading:

8 Problem Sets	8 x 100	800
2 Presentations	2 x 75	150
Class participation	50	50
Midterm	800	800
Final	800	800
Total		2600

## Ch 102 – Introduction to Inorganic Chemistry

### Syllabus

1. Molecular symmetry

Recommended reading: 4.1-4.6, 4.8, **17.7-17.9\***

2. Bonding models

Recommended reading: 5.1-5.5, **16.7-16.10**

3. MO Theory: Applications to main group compounds

Recommended reading: 5.4-5.7, **15.2-15.11**

4. Vibrational spectroscopy

Recommended reading: 4.7, **14**

5. Lewis acid – base chemistry

Recommended reading: 6.13-6.16, 7, 9.4-9.9

6. Transition metals / Oxidation states / Electron count / Bonding

Recommended reading: 20, 21.2-21.4, **13**

7. Reaction mechanisms

Recommended reading: **22**, 26

8. Catalysis: Metals in biology

Recommended reading: **23**, 29

9. Catalysis: Organometallic chemistry

Recommended reading: **24**, 27.1-27.7

10. Catalysis (cont)

\* **In bold:** Select a compound / topic for short project and presentation from the bold assigned reading. (Ex: Allotropes of phosphorous; Oxides of sulfur; Oxidation States of Copper)