

General Chemistry A (101)

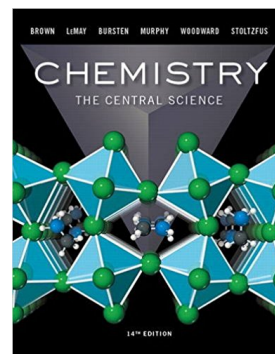
Instructor: Willetta Greene Johnson, Ph. D. wgreene@luc.edu

Office: ~~St. Joseph Seminary, Room 307; 8-3537~~ || Office Hours: Wednes. 1:30 P-2:20 P
Zoom ID: 973 7640 8211

Who am I: A chemical physicist trained in surface science interested in (1) thermodynamics and entropy (2) cooperative systems (swarm behavior); (3) producer, composer, orchestrator, pianist, sequencer, and conductor. I have guest conducted with The Chicago Sinfonietta on several occasions. A work of mine was also performed by The Cincinnati Symphony Orchestra. My vocal ensemble also has recorded two compact discs. One of my songs was doubly tracked on a Grammy award winning CD in 2004. Since then, song has been covered by six other groups including an ensemble from Milan (2017). A re-release is scheduled (2020).

Prerequisite: Satisfactory performance on the Loyola math proficiency test; or completion of MATH 117 with a grade of C- or better.

Required: Chemistry, the Central Science. 14th ed. Theodore L. Brown, et. al. Boston: Pearson Prentice Hall: 2011 ISBN: 978-0134414232. (The Mastering Chemistry asset is NOT required in my section, but may be required in a future Chemistry 102 section.)



Chemistry 101 Course Packet, authored by the instructor. This useful lecture packet is available online at www.universityreaders.com. The course packet will be mailed to you within a few days of ordering, but you'll have immediate online access to the first 20 or so pages once order is completed.

Synchronous Meetings * 10 minutes grace, * Discussions = Friday

M	Aug 24 only	1:20 PM* – 2:20 PM	959-6852-9369	Intro to Course
F*	Aug. 28 – Nov. 13, Dec. 4	1:20 PM* – 2:20 PM	973-7640-8211	Joint Disc Prep
F*	Aug. 28 – Nov. 13, Dec. 4	2:40 PM* – 3:40 PM	971-6311-0019	Section 012
F*	Aug. 28 – Nov. 13, Dec. 4	4:00 PM* – 5:00 PM	985-2823-7804	Section 013
W	Nov. 18 (Rev. Exam 3)	1:20 PM* – 2:20 PM	969-9240-1474	Review Ex. 3



Please attend assigned discussion, in order to receive credit, as these are full sessions. Due to the pace and format of the course **there can be absolutely no alteration of this schedule.**

Course Description: A study of chemical principles and generalizations with emphasis on the development of a scientific attitude and an understanding of the fundamental concepts of chemistry.

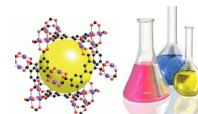
Calculators: A scientific calculator is sufficient. Calculators cannot be shared while exams are in progress and their covers must be removed. Be familiar with your calculator and the status of its batteries. The student is responsible for having a working calculator in lecture and on an exam day.

Cell Phone¹ Policy: It is forbidden to video/audio record lecture (except Loyola University staff). **During exams, cell phone, wireless devices, videos, conference with others and unauthorized materials are strictly forbidden; subject to device confiscation and dismissal from exam.**

SAKAI Connection: The syllabus, homework assignments for the semester, discussions, and discussion answers will be posted at the following website: www.luc.edu, look under LINKS, click on **Sakai**). Students possessing a Loyola email address are able to access this site.

Additional Information: For your convenience, protocol regarding soliciting a recommendation from me is listed on page 9, should you desire one and qualify (see protocol).

¹ All technology, smart phone, tablets, laptops and similar technology... Violations will be treated as instances of **academic dishonesty** (see page 5)



Objective of this course in grander detail:

By the conclusion of this course, the student should experience the following outcomes:

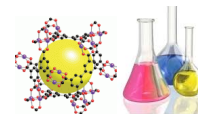
1. Understand the fundamental principles of physical chemistry
2. Acquire a knowledge base of basic terminology and classifications
3. Apply concepts creatively as well as methodically to solve multi-tiered problems
4. Know how to rank, estimate, analyze and critically evaluate a range of models
5. Gain a broader understanding of the role of chemistry in human endeavor
6. Appreciate the collaborative and global effort of the scientific enterprise

Specifically the engaged student should improve in her or his ability to

- **Grasp the fundamentals of chemistry:**
 - Standard calibrations and units of measurement, Stoichiometry, Conservation rules,
 - Ideal Gas Law, 1st Law of thermodynamics, Single component P-T phase diagram
 - Proto-quantum mechanics: Bohr / Einstein relations, Pauli Exclusion Principle, Hund's rule
 - Lewis Diagrams and VSEPR theory (applied to small or otherwise simple molecules)
- **Categorize general chemical processes:**
 - Broadly classify chemical properties (metals / non-metal, acids / bases, etc.).
 - Recognize and write reactions, including double exchange, combustion, precipitation, acid-base, and redox and to predict outcomes based upon these reactions
 - Categorize relative bonding strengths between atoms, ions or molecules
 - Predict and be able to sketch geometry of small or otherwise simple molecules
- **Assess outcome feasibility:** estimate energy cost of simpler chemical processes
- **Work and exchange ideas with others:** cordially solve weekly group problems together
- **Appreciate the impact of chemistry:** realize better how chemistry impacts life
- **Contribute constructively:** as a science-literate, ethically responsible citizen and voter.

Later in this semester, you will receive an emailed invitation to assess me via the [Smart Eval Platform](#) which allows the student to assess how successfully the instructor realized the objectives indicated above, as well as course effectiveness and other contextual experiences. The Smart survey will be sent via a link through Outlook.

As student raters, please be aware that the results of your ratings for this class will be included as part of the information used to make decisions about promotion / tenure / salary increases for this instructor. Fairness to both the individual and the institution require *accurate and honest* answers.



Recording of Zoom class meetings

In this class software may be used to record live class discussions. As a student in this class, your participation in live class discussions might be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the course has concluded. *Students will be required to turn on their cameras at the start of class. Students who have a need to participate via audio only must reach out to me to request audio participation only without the video camera enabled.* The use of all video recordings will be in keeping with the University Privacy Statement shown below.

Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Please note that NO synchronous sessions (with students present) are *intended* be recorded in this course however there is a legal mandate from the Dean's Office to include the following statement regarding ZOOM class recordings:

Tutoring and Dedicated Personnel

This year we are fortunate to have both SI and TA as resources (supplemental instructor and teacher's assistant).

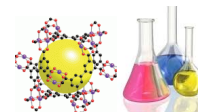
SI: **Allie Scheu** ascheu@luc.edu. Allie did well in my class, and has been a Chemistry SI for several instructors. She will confer with the class as to best times to hold sessions.

TA: **Xiolmara (Xiol) Martinez** xmartinez@luc.edu Xiol is a chemistry graduate student working in analytical chemistry with Prof. Chiarelli. Xiol will hold help sessions.

Details regarding these personnel's availability will be updated as needed. Current information for SI's is maintained at <https://www.luc.edu/tutoring/> ,

Tutoring. Help is also available at the Tutoring Center (see above URL) ²

² Information from on-campus sources such as The American Chemical Society will be posted on SAKAI once that schedule is available.

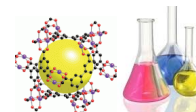


CHEMISTRY 101 Tentative Schedule of Topic

Week / Day	Topic	Chapter	approx. pages
8/24 – 8/28	Intro, Measurements, Reporting Accuracy Periodic Table Overview / Atomic Model	1 2	2 – 34 Edition 14 55 – 58
8/31, 9/2, 9/4	Molecular Representation, Atomic/Formula Weights; Avogadro #; Mole	2	42 – 45; pg 72 = alkanes 48 – 69; pg 70 = name acid
9/7	LABOR DAY		No class
9/9 – 9/11	Empirical Formula, Stoichiometry, Combustion, Limiting Reactant; Theoretical vs. Actual Yield	3 3	82 – 98 98 – 110
9/14 – 9/18	Aqueous Rxns (1) Precipitation (ppt)	4	120 –128
9/21–9/25	Aqueous Rxns (2) Acid Base Reactions	4	129 –137
9/25	Discussion Activity will include some review		Handouts MAY or MAY NOT be disseminated.
9/28 Monday.	EXAM 1	1 – 3	No phones, tablets, videos, or conference w/ others while taking exam.
9/30, 10/2	(3) Redox Rxn, Molarity, Concentration, Titration	4	138 –139
10/5 – 10/9	Redox Rxns; Stoichiometry involving molarities	4	142– 153
10/12–10/16	Ideal Gas; Molar Mass Density /Stoichiometry; Dalton's Law /Kinetic Theory / Effusion	10 10	394 – 410 411 – 419
10/19–10/23	Thermochemical Reactions: calorimetry Hess's Law; Enthalpy of Formation	5 5	164 – 183 184 – 190 Extra: 191-200
10/23	Discussion Activity will include some review		Optional —see disclaimer above
10/26 Monday.	EXAM 2	4, 10, (5)	Obviously 5 we “got to”
10/28, 10/30	Light & Matter; Hydrogen Bohr Model	6	212 – 224
October 30	Last day to withdraw w/o penalty Spring Registration starts 11/2		Hopefully not scary!
11/2 – 11/6	Complementarity, Pauli's Exclusion Principle PEP; e ⁻ conf'n / Quantum #'s; Hund's Bus Rule; Orbital Diagram, Paramagnetism / Diamagnetism	6 6 9	215 – 218 219 – 240 379
11/9 – 11/13, 11/16	Periodic Table Trends: Anomalies (exceptions) size, EN, IP, EA; Ions, Covalent Bond/Lewis structures ³ ; resonance; VSEPR; σ , π bonds	7 8 9	241-247 257-258, 260-268 272 (ions); 273 (EA), Lewis: 298-302, 305-310, 312-328
11/18	Synchronous Meet 1:30 PM - 2:30 PM		Optional —see disclaimer above
11/20 Friday.	EXAM 3	5 - 9	5 - 8; *selected topics in Ch 9
11/23 –11/28	...THANKSGIVING BREAK...		Enjoy!
11/30 –12/4	VSEPR & Molecular geometry; how to draw; π bonds, resonance, hybridization, polarity		338 – 350 formal charge p 318 ⁴
12/9 Wed.	Zoom REVIEW for FINAL 1:30-2:30		900-912, 917-930
12/10 Thursday.	FINAL 5:30 P – 7:30 P	1–11, 21	Sakai Test/Quizzes

³ Optional: Molecular Orbital Theory, Ch. 9, pg. 369-376

⁴ also appendix in lecture-notes



HOMEWORK⁵ : is not graded, but student is strongly encouraged to do it, and to do it well. A parallel assessment is made via weekly discussion assignments comprised of exam representative problems. **End-of-Chapter Problems:** Students who are making good progress in the course should be able to solve, independently, most or all of the end-of-chapter problems in the textbook, as well as most of the discussion problems. A group of exemplary problems is listed below as “assigned” problems. There are on average 15-30 of these per chapter.

CHAPTER	PAGE	PROBLEMS
1	35	1-3, 6, 7, 8, 10, 11, 13, 15, 19, 21, 25 (1 cal = 4.184 J), 31, 32, 35, 39, 42, 43, 45, 47, 49, 51, 54, 55a-c, 57 (for ft ³ to cm ³ : 1 ft ≅ 30.8 cm) 60, 61, 63, 67, 68 a,c ; **79-82
2	76	1 (physics is everywhere), 3, 5—8, 11, 13, 14, 19, 23, 25, 27, 29, 31, 35, 39, 41, 45-47, 49, 50, 52, 53 (O = red, C = black, H = white), 55, 57, 59, 63, 67, 69, 71, 73, 77, 79 (some parts ↔ reactions), 99b, 100, 105, 109, 110 ; Ch. 7: 4, p. 290
3	112	1, 3, 7, 9, 11, 13, 15, 19, 21, 23 (formula wt ≅ MM), 25 (a,c,e), 31, 35, 37, 39, 41, 45, 47, 49, 53, 55, 57, 61, 62, 69, 73, 75, 77, 79, 83, 85, 93, 95
4	155	1-3, 5*, 7, 15-17, 23, 25, 27, 29, 31, 33, 35, 39, 43, 45, 47, 51, 53, 59, 63, 65 (BAC = Blood Alcohol Count), 69, 73, 75, 77, 83, 87, 89 (for the truly committed. ⁶ ?), 94
10	425	3, 5-7, 9-11, 27, 28, 33, 37, 39, 41, 43a,b,d; 47-49, 51a, 55, 57, 63, 64, 69, 72 (how many moles of each?), 79, 83, 87, 89 (use 0.285); *17 & *23: ΔP = ρgh; *15 (P = F/A)
5	203	3-5, 7, 9, 11, 13, 15 (uh,...more physics), 19, 21, 23, 25, 27, 31, 37, 39, 41, 43, 45, 47, 49, 51, 55, 57, 59, 63, 65, 69, 73, 75, 81, 91, 95, 99*, 103**; Ch. 3 (p. 116) 71.
6	250	1-5, 7, 11, 12, 15, 17, 19, 25, 29: ΔE = $\frac{1.196 \cdot 10^5 \text{ kJ-nm}}{\text{mol}}$, λ in nm, 37, 41, 43, 45 (similar to 7), 47, 49, 55, 57, 62, 69, 75-76: textbook's condensed electron config'n is my valence e⁻ config'n 78, 79, 86: hc/λ = E photon; energy during CD play = (Power·Δt), 88*, 93, 100**.
7	290	2, 7b, 25, 27, 29, 35, 45-47, 55, 65 a(product = strong base) b(double exchange rxn) c(product = strong acid). d('bicarbonate formed'), 69, 77, 94, 96; 75 (history), 54** (optional)
8	330	1, 4, 9, 11ab, 13, 14, 17, 19, 31-33, 35, 37, 41, 47, 48, 51, 53, 55, 58, 59, 63-65; *45: metals found in ionic <u>AND</u> covalent comp'ds: some <i>metal</i> bonds can be mostly COVALENT
9	386	1, 3a-e, 4, 5, 7, 9a-c, 14-17, 21, 25, 27-30, 33a, dipole: 35, 37, 39, 41, 44; 53, 57, 59, 61, 62 (also find how many π bonds), 67, 86, 87, 102: C=C π bond energy: 614 kJ/mol. Notes: (1) my parent / orbital geometry ↔ e ⁻ domain geometry), (2) terminology <i>electron domain</i> ↔ my <i>electron pair</i> . (3) <i>electron domain geom.</i> ↔ my <i>orbital geometry</i> ⁸
21	936	1, 5, 9, 11, 13, 15, 17, 21, 29, 31, 47, 49, 55 a,b; 61 optional: 72, 76*, 80*

swap underscore for 'orbital box'

Examinations: Three 50-minute exams will be given on dates below, also noted in the schedule.

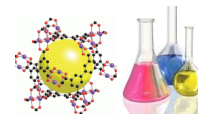
Sept. 28, Oct. 26, Nov. 20

⁵ The solutions to homework problems will be placed on 2-hour reserve at the Cudahy Library.

⁶ Interpreted as needed

⁷ Subtract excess mole acid (NaOH calc'n) from mol orig'l SA = am't that reacted w/ Mg(OH)₂, assume 2 OH's released, (true for small conc'ns))

⁸ orb geom (a) thru' (f): AX₂, AX₃E, AX₄E, AX₆, AX₄, AX₂



Exams/Final Exam will be administered through

SAKAI Tests / Quizzes, 1:30 PM - 2:40 PM (M, M, F)

The **2-hour** final exam will be administered on **Thursday, Dec. 10** at **5:30 P – 7:30 P**. You will have exactly 2 hours to complete the exam. Additional time will not be granted, even if you arrive late. There will be no make-up final exams given under any circumstance, and the exam will not be given early, either.

Instructors may not reschedule final exams for a class for another day and/or time during the final exam period. There can be no divergence from the posted schedule of dates for final exams. Individual students who have four (4) final examinations scheduled for the same date may request to have one of those exams rescheduled. If a student reports having four final examinations scheduled for the same date, students should be directed to e-mail a petition to Adam Patricoski, Assistant Dean for Student Academic Affairs, CAS Dean's Office (apatricoski@luc.edu).

Your course grade will be determined from these exams by a procedure elucidated in the next section. ***The exams and the final exam are cumulative; expect subsequent exams to include concepts that have been tested on the previous exams.***

Grading Scheme:

The scores of the three-hour exams, a final exam and *selected problems on the discussion worksheets* will be used to determine your course grade. **IF quizzes are administered, their points will count toward the discussion grade.** If an exam/discussion is missed for any reason, other than extenuating circumstances deemed admissible by the university policy, that exam will be dropped, and/or that discussion will receive a score of 0 points. If a second exam must be missed, in order to make up the second exam (1) a communication explaining the absence must be emailed within **24 hours** after the scheduled time (2) a doctor's note and/or a letter from a guardian, supervisor, etc., must verify proof of illness (3) exam must be taken by the next class meet time, else no make-up exam can be arranged.

Course grade will be determined in one of two ways and by the grading scale shown:

Item	Method 1	Method 2
Exam 1	20 %	20 %
Exam 2	20	20
Exam 3	20	One dropped: Ex. 1 or 2 or 3
Discussion Worksheets/ Quizzes	10	10
Final Exam	30	50

GRADING SCALE

Grade Scale:	A	≥ 91	A-	88-90	
B+	85-87	B	81-84	B-	78-80
C+	75-77	C	71-74	C-	68-70
D+	64-67	D	60-63	F	< 60

Whichever scheme benefits the student at semester's end will be employed. **Caveat:** No make-up exam will be given after 48 business hours after scheduled exam. For instance, for a scheduled Wednesday exam, make-up exam must occur by same start time on the following Friday, or that exam will be dropped.



Missed Exams:

The first exam missed for any reason⁹ will be dropped. For instance, say that you took exams 1 and 3 but had to miss exam 2. Then exam 2 is dropped and Method 2 grading scheme applies. If an *additional* exam date is missed for legitimate reason, that *second absence* can be made up within 48 hours (1 meet) after that scheduled exam (see two paragraphs above). Due to the size of enrollment and the volume of work in this course as well as its pace, there can be no exceptions to this policy.

Please make every attempt to take the final exam on time. If the final exam is missed, the student will receive an automatic WF. If no action is taken, the WF will automatically revert to an F. The student must have valid documentation of why the exam was missed, and must contact the Dean's office of the college that she is registered in. **It is the student's responsibility** to coordinate the make-up exam between the dean's office and the instructor.

Academic Integrity

All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, which can be viewed at:

<http://www.luc.edu/cas/advising/academicintegritystatement/>

A basic mission of a university is to search for and to communicate the truth as it is honestly perceived. A genuine learning community cannot exist unless this demanding standard is a fundamental tenet of the intellectual life of the community. Students of Loyola University Chicago are expected to know, to respect, and to practice this standard of personal honesty.

Academic dishonesty can take several forms, including, but not limited to cheating, plagiarism, copying another student's work, and submitting false documents.

Any instance of dishonesty (including those detailed on the website provided above or in this syllabus) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be.

As in the past, **cheating will be SEVERELY dealt with, *minimally costing the offender* a grade of "zero" for the item that was submitted and this grade cannot be dropped.** Additionally, the incident must be reported to the Department Chair and the Office of the Dean. Depending on the seriousness of the violation, additional sanctions may be imposed. Which has happened before.

Course Repeat Rule

Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and personally meet and obtain a signature from either the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

⁹ Exception: employed representatives of Loyola University Chicago.

Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC):

Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes.

Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation (develop standard form on web) describing the reason for and date of the absence.

This documentation must be signed by an appropriate faculty or staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to give the student the opportunity to take the examination at another time.

(<https://www.luc.edu/athletheadvising/attendance.shtml>)

Accommodations for Religious Reasons

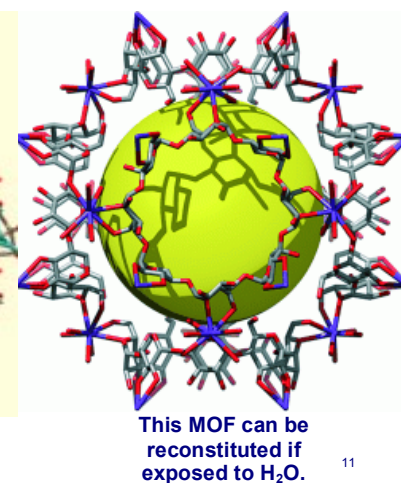
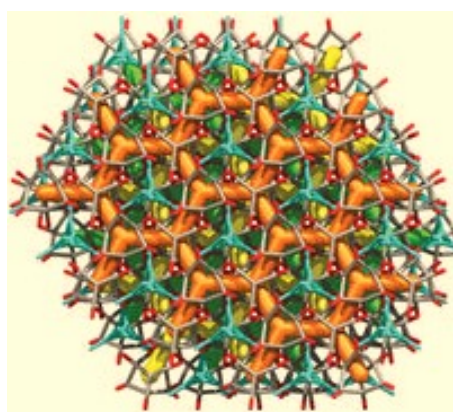
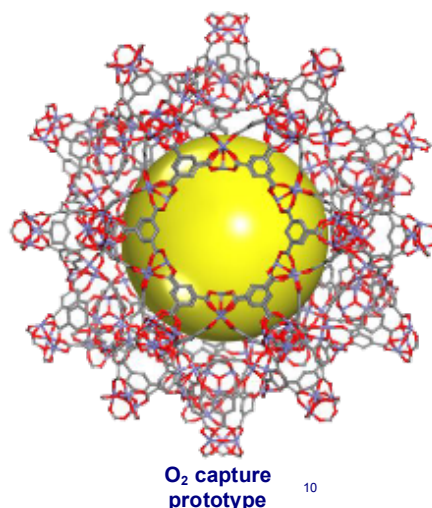
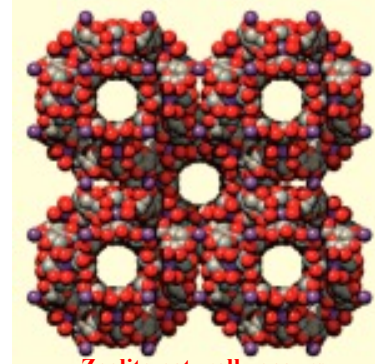
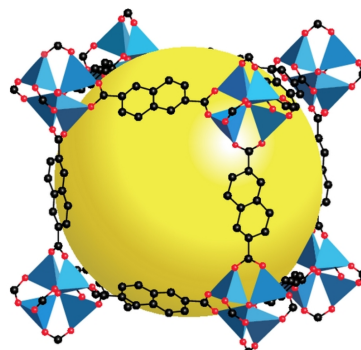
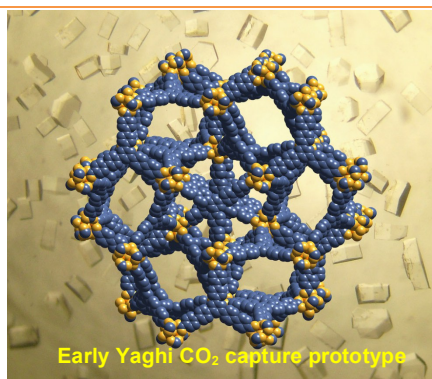
If you have observances of religious holidays that will cause you to miss class or otherwise effect your performance in the class you must alert the instructor within 10 calendar days of the first class meeting of the semester to request special accommodations, which will be handled on a case-by-case basis.

Laboratory:

Chemistry 111, the general chemistry laboratory course, should be taken concurrently with the lecture course in general chemistry. The lecture and the laboratory courses are graded independently. Students should first consult the Chemistry Department bulletin opposite the wall facing the chemistry office for information, or they can contact **Dr. Katrina Banaku**, the administrator of the laboratories.



ENERGY CAPACITOR, OXYGEN FILTER,...OR GORGEOUS ART?



Metal organic frameworks (MOF) are compounds with design inspired by naturally occurring zeolite (boiling stones). They are composed of two major components: a metal ion or cluster of metal ions and an organic molecule called a linker. They are often porous and the pores can filter or capture particles. The metal ion and linker choices dictate the size and shape of pores.

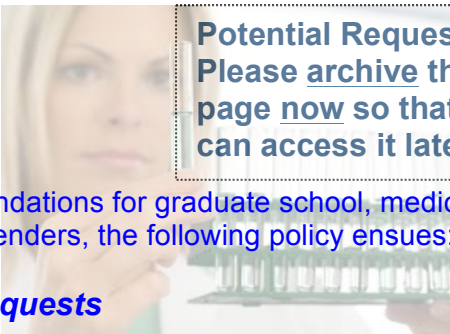
These porous crystals are promising for their applications to clean energy storage and generation, clean water generation and delivery, super-capacitors, thermal batteries, ion / electronic conductivity, molecular filters, oxygen or carbon capture, catalysis, and targeted drug delivery. ¹²

MOFs have been identified by the US Department of Energy as amongst the most promising next-generation technologies for carbon capture. Some sources project that the global market for carbon capture and sequestration will be worth \$221 billion by 2030.

¹⁰ Sandia National Laboratories (2017) so new that what it's made of is proprietary status.

¹¹ Stoddart <http://onlinelibrary.wiley.com/doi/10.1002/anie.201002343/abstract> (2010) organic linker = γ -cyclodextrin and metal = alkali salt.

¹² Many groups such as Yaghi (first inventor, UC Berkeley), Stoddart (Northwestern U.), Sholl (Georgia Tech), etc., actively research MOFs.



Potential Requesters:
Please archive this page now so that you can access it later.

Recommendations Protocol

Later in your student career, you may require recommendations for graduate school, medical school, or the like. If I am chosen among your recommenders, the following policy ensues:

1. **Deadline for LOR (letter of recommendation) requests for 2020-2021 cycle: February 1, 2021.**
2. Student must generally possess GPA of 3.5 or above. This is mainly due to volume of requests. However, a student might be considered if she/ he presents a **written explanation** that reveals exceptional circumstances that might account for a lower GPA.
3. Student must provide attached in one email, a document listing his/her correct GPA, contact information, deadline(s), and also all chemistry, biology and physics courses and labs that the student has take—in the following format (or Committee format, if you are applying through committee):
 - a. **GPA**
 - b. reliable, current email and telephone # that student checks *regularly*
 - c. **DEADLINE**
 - d. Table with header: course taken, instructor, grade

Example:

Course	Semester / year	Instructor	Grade
Chemistry 101	Fall /21	Dr. WGJ	A-
Biology 210	Spring /22	Dr. Rodney Dale	A

- e. If applying through Committee, be sure to handle the **signed waiver** with Pre-Health. Send the other items to me (wgreene@luc.edu) in one email.
 - f. If applying “outside the Committee”—see items 5, 6 below, a list of all schools of the applicant and **ALL of their DEADLINES**.
 - g. All cover forms, application packages, envelopes should be in one binder, folder, or otherwise secure containment, with like items paper-clipped together.
4. I'd love to read your personal statements, even in rough draft form. It tells me something about you and helps me to shape a recommendation. This article is not required, but I recommend it.
 5. **It is STRONGLY recommended that the student apply through the Loyola Pre-Health Advisory Committee.** Well-regarded by the medical/dental/pharmaceutical community, the Committee's voice of endorsement will increase the merit of the student's application. Their method also assures that the student's personal statement is strong and well written. If the student applies via Committee, s(he) should provide me a cover sheet obtained from the Office of Pre-health (Sullivan Center 262).
 6. **APPLICATIONS OUTSIDE COMMITTEE:** If a student who I can recommend elects to apply apart from the Pre-Health Advisory committee, she/he must perform steps 2-4 and email materials to wgreene@luc.edu. Online LOR uploading protocols (AMCAS, PTCAS, Interfolio, etc.) are **STRONGLY** preferred.
 7. Due to volume of requests, your LOR won't be started until all items in step 3 are fulfilled.
Just in case you need a LOR later: take a picture of this information now or otherwise save.