

A CH301 Random Musings September 21, 2010

Lots of important informational tidbits as we gear up for the exam next week:

1. A full musings on exam 1 procedure will be provided on Tuesday next week.
2. A worksheet 4 will be posted tonight that gives you an introduction to Chapter 2 on the exam. On Thursday night you will receive a worksheet 5 that will cover all the question types on building Lewis structures that will show up on exam 2.
3. On Saturday you will receive a practice exam 1 in the ChemPortal. On Sunday you will receive a practice exam 1 from the TAs.
4. On Monday night I will hold a review from 9 till 10 pm in WCH 1.120 that will cover the 30 question types.
5. On Tuesday Travis will hold a review session from 9 to 10 pm in WCH 1.120 where he will answer all your last minute questions for the exam. It will occur during the last hour of the academic community.
6. My office hours tomorrow and Thursday are in my office. Next week they are in the classrooms on Monday through Wednesday as we prepare for the test.
7. On Wednesday night next week from 7:30 till 9 pm I will give the first exam for CH301. Room assignments will be provided (we use multiple rooms so pay attention on Tuesday during the musings for where to go.)
8. The following Sunday there will be a make-up exam scheduled from 7:30 till 9 pm in Welch 2.224.
9. Errata: some mistakes to be aware of (and thank you for e-mailing with them):
 - There was an error in the first question on the TA practice quiz 2. It was corrected quickly but some of you may have an earlier version, so if the answer seems wrong, download the right one.
 - Some corrections to some pretty glaring errors in the course packet were supposed to happen but didn't.
 1. On p. 111 in the course packet, in the ionization energy picture, it should say, "Going down, as shielding goes **UP**, there is a weaker hold on the electrons, and ionization energy goes down
 2. On p. 112 in the course packet, in the ENC picture, it should say, To the right, ENC goes **UP** because the protons increase.
 - The Born Haber cycle for NaCl is all scrunched together in the notes. I am not teaching this material yet because it requires you understand thermo, but here is someone else's very nice step by step presentation about how sodium metal and chlorine gas explosively make table salt:

<http://www.luc.edu/faculty/spavko1/c340/lect/Born-haber-nacl.pdf>
10. I am upgrading the dynamic book, though it is a work in progress, and for the mean time, you should probably use the e-book in the portal. That said, I just about have all the video clips on content material for the first exam posted to be accessed from my archival web site—and pretty soon, you can think of a question type, and basically go there and listen to me talk about it. Kind of like a friend explaining things, except that your friend is the professor who is teaching the course.

Some details what is going on with the video clips from the announcements on Sunday:

-1. I have now posted 37 video clips of the content from my first 7 lectures. They are found at

<http://laude.cm.utexas.edu/courses/ch301/videoclips.html>

and are sorted by lecture 1 through 7, in 2 to 5 minute clips.

0. These are in .mov format which can certainly open in Quicktime. How else you might open it is up to you.

1. You can tell what the subject matter is from the title pretty easily, and this lets you watch a specific clip corresponding to, say, a question type on the quiz.

2. If you simply want to watch an entire lecture, just watch the clips in sequence (like Lecture 2: parts 1 through 5—they are within a couple of words of being correctly spliced.)

3. You can view these streaming or download them. Your choice--if you have a slow computer, then download. Also, your plugin to watch them might have limited features on it (like sound or sizing) so a download might be better for that reason, and of course it lets you save it.

4. Look, these are small (5 to 20 MB) for a reason. Don't expect high def or even low def. But what you will get is good audio, and the ability to watch me pointing to a periodic table and writing on a superimposed document camera. The resolution should be adequate to read what I write and almost see the twinkle in my eye.

5. You will notice a difference of 30 pounds between some of the videos, and bad hair, and a funny collar. I even label my files things like--fat, bad hair lectures or, 70s collar lectures.

6. It is my intent to have the entire semester's worth of videos posted, usually up to a week in advance. For example, I should have all the videos for the first exam up by Wednesday evening.

7. It is my intention to import these into the Dynamic text at appropriate locations (as designated in the file name). So you can read the lecture material and watch the videos of the material. I'll let you know when it is ready.

THIS IS DEFINITELY A WORK IN PROGRESS, SO EMAIL WITH ANY ISSUES, BUT DON'T EXPECT PERFECTION OR IMMEDIATE REPAIR IF SOMETHING DOESN'T WORK.

11. Why this isn't high school any more—college professors should be pushing you to ask questions for which there are no particularly easy answers. I had a glorious discussion session today in which I was assaulted by students because my simple rules for freshman chemistry fell apart:

- When you see the order of electronic configurations out of sequence, don't be alarmed—some people write the EC following the periodic table sequence and some write it following the quantum rules. I don't care which you use as long as you get the right number of electrons in the sub-shells.
- There is some confusion about how exactly to calculate ENC. Look, the version I gave you doesn't give a real ENC, just a relative ENC, and it serves its purpose in explaining trends. So if you want real ENC values, do some QM. In the mean time, I will only be concerned with electrons in the $n=1, 2$ and 3 shells, where the shielding is $0, 2$ and 10 , respectively.
- So when do we make a filled or half filled shell argument? It almost seems random you say, and the TAs aren't making it any easier with their questions on worksheets. Actually the answers aren't random, they are just more complicated. And naturally, for those of you trying, the second I expose you to these kinds of concepts, and you want a simple way to explain them, there start to be places where things don't work anymore.

for example, if s^2d^4 makes s^1d^5 then why doesn't s^2p^2 make s^1p^3

or

if Tl^{+3} makes d^{10} rather than s^2d^8 then why doesn't Ag^+ make d^{10} rather than s^2d^8 .

The answer is that I don't know (or rather, it is more complicated than to simply look at ENC or subshell stability arguments, which are all we have in freshman chemistry.) So the issue is, when do we back off and say, "enough is enough." And the answer is, your professor will tell you.

For example, for today,

- knowing that s^2d^4 makes s^1d^5 and s^2d^9 makes s^1d^{10} , is good enough for me.
- and THE QUIZ IS REALLY STRAIGHT AHEAD, DO NOT OVERTHINK IT!!

12. And finally, what you all have been waiting for: Here are the question types for the exam—there may be some minor modifications that will be updated:

1. electromagnetic radiation theory and calculation
2. classical theory falls apart (blackbodies, photoelectric effect and atomic emission)
3. Rydberg equation calculation
4. particle in a box theory
5. uncertainty principle theory and calculation
6. deBroglie equation theory and calculation
7. Schrodinger wave equation theory
8. applying quantum number rules to boundary conditions
9. applying quantum number rules to boundary conditions
10. applying Aufbau, Pauli and Hund
11. assigning electronic configurations of atoms and ions
12. assigning electronic configurations of atoms and ions (exceptions)
13. assigning electronic configurations of atoms and ions (exceptions)
14. periodic table nomenclature
15. theory of periodic trends: ENC and shielding explain IE, EA, AR, IR, metals
16. ranking periodic trends: IE, EA, AR, IR, metals
17. ranking periodic trends: IE, EA, AR, IR, metals (exceptions)
18. Lewis structures of ionic compounds
19. Lewis structures of covalent compounds, resonance
20. Lewis structures of covalent compounds, multiple bonds
21. Lewis structures of covalent compounds, multiple central atoms
22. Lewis structures of covalent compounds, multiple central atoms
23. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
24. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
25. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
26. ranking crystal lattice energy
27. electronegativity calculation and ranking
28. assigning formal charge
29. formal charge and correct Lewis structures
30. ranking bonding trends: EN, bond energy, bond length

13. THE BATTLE FOR TRIVIAL MEMORIZATION SUPREMACY

Travis and I are going to go to battle. Last year he challenged me to a periodic table of elements face off.

And choked on element 34!!!!

As I went on to name all the elements, flawlessly.

Thursday, the rematch. After the exam we will go toe to toe, alternately calling out the names of the elements (I won't be looking at the periodic table, Travis, I can't speak for.) To make this more interesting, you all will participate in earning extra credit points by making the following choice:

- Choose me as the winner, and you get 1 point toward your grade.
- Choose Travis as the winner and you get 2 points toward your grade.
- Predict that both Travis and I make it through the first 103 elements without error, basically ending in a tie, and you get 3 points toward your grade.

14. Your class's disturbing need to write love and hate poetry while studying for exam 1:

Charged Denial

Sometimes things are just too sad to explain,
But you're charge pulls me closer,
Going against my every grain.
Whether it's down or right,
Or we're on different levels,
Your field is still pulling me tight.
My heart expands with an irrational affinity for you.
I want you near, I need you near.
Nothing can shield you from my view.
Together we are stable;

Our chemistry can be measured on the periodic table. Drinking Starbucks "doubleshot" from my coffee mug
While studying chemistry and sitting on my rug
I see it crawling! A BUG!
I smashed it -that roach - I think I need a hug...

I see electrons all around,
excited up, falling back down,
There are various subshells, unstable like d6.
Take one off and it'll be fly like a p6.

"I Did Not Get an A"

Optimistically, I studied what I could
Of course, I told myself I would
Yet I only earned a stupid B
Well, still better than a C

I went to discussions yesterday
But still I did not get an A
I emailed the teacher about it
He emailed back "I'm a professor."

I did not get an A
"Dr. Laude, what will the med schools say?"
He emailed a remark about my education
And sent an attachment with a Walmart Greeter application

Now to be fair, if I did get an e-mail from a student after doing poorly, I would actually write THE FIRST HAIKU OF MY LIFE:

it will be okay
don't give up, you can do it
make an appointment

and other platitudes because I care