

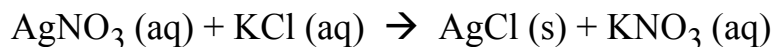
**Practice General Chemistry SPEAK Test**  
(by Heather Elson, Fall 2005)

	<b>THE PERIODIC TABLE</b>																									
1	1 <b>H</b> 1.0079	2											13 <b>B</b> 10.811	14 <b>C</b> 12.011	15 <b>N</b> 14.007	16 <b>O</b> 15.999	17 <b>F</b> 18.998	18 <b>Ne</b> 20.18								
2	3 <b>Li</b> 6.941	4 <b>Be</b> 9.0122											13 <b>Al</b> 26.982	14 <b>Si</b> 28.086	15 <b>P</b> 30.974	16 <b>S</b> 32.066	17 <b>Cl</b> 35.453	18 <b>Ar</b> 39.948								
3	11 <b>Na</b> 22.99	12 <b>Mg</b> 24.305	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31 <b>Ga</b> 69.723	32 <b>Ge</b> 72.61	33 <b>As</b> 74.922	34 <b>Se</b> 78.96	35 <b>Br</b> 79.904	36 <b>Kr</b> 83.8
4	19 <b>K</b> 39.098	20 <b>Ca</b> 40.078	21 <b>Sc</b> 44.956	22 <b>Ti</b> 47.88	23 <b>V</b> 50.942	24 <b>Cr</b> 51.996	25 <b>Mn</b> 54.938	26 <b>Fe</b> 55.847	27 <b>Co</b> 58.933	28 <b>Ni</b> 58.693	29 <b>Cu</b> 63.546	30 <b>Zn</b> 65.39	31 <b>Ga</b> 69.723	32 <b>Ge</b> 72.61	33 <b>As</b> 74.922	34 <b>Se</b> 78.96	35 <b>Br</b> 79.904	36 <b>Kr</b> 83.8								
5	37 <b>Rb</b> 85.468	38 <b>Sr</b> 87.62	39 <b>Y</b> 88.906	40 <b>Zr</b> 91.224	41 <b>Nb</b> 92.906	42 <b>Mo</b> 95.94	43 <b>Tc</b> (97.91)	44 <b>Ru</b> 101.07	45 <b>Rh</b> 102.91	46 <b>Pd</b> 106.42	47 <b>Ag</b> 107.87	48 <b>Cd</b> 112.41	49 <b>In</b> 114.82	50 <b>Sn</b> 118.71	51 <b>Sb</b> 121.76	52 <b>Te</b> 127.6	53 <b>I</b> 126.9	54 <b>Xe</b> 131.29								
6	55 <b>Cs</b> 132.91	56 <b>Ba</b> 137.33	57 <b>La</b> 138.91	58 <b>Hf</b> 178.49	59 <b>Ta</b> 180.95	60 <b>W</b> 183.84	61 <b>Re</b> 186.21	62 <b>Os</b> 190.23	63 <b>Ir</b> 192.22	64 <b>Pt</b> 195.08	65 <b>Au</b> 196.97	66 <b>Hg</b> 200.59	67 <b>Tl</b> 204.38	68 <b>Pb</b> 207.2	69 <b>Bi</b> 208.98	70 <b>Po</b> (209)	71 <b>At</b> (210)	72 <b>Rn</b> (222)								
7	87 <b>Fr</b> (223)	88 <b>Ra</b> (226)	89 <b>Ac</b> (227)	90 <b>Rf</b> (261.1)	91 <b>Ha</b> (262.1)	92 <b>Sg</b> (263.1)	93 <b>Ns</b> (262.1)	94 <b>Hs</b> (265.1)	95 <b>Mt</b> (266.1)	96 <b>Uun</b> (268)	97 <b>Uuu</b> (269)															

Lanthanide Series	58 <b>Ce</b> 140.12	59 <b>Pr</b> 140.91	60 <b>Nd</b> 144.24	61 <b>Pm</b> (144.9)	62 <b>Sm</b> 150.36	63 <b>Eu</b> 151.97	64 <b>Gd</b> 157.25	65 <b>Tb</b> 158.93	66 <b>Dy</b> 162.5	67 <b>Ho</b> 164.93	68 <b>Er</b> 167.26	69 <b>Tm</b> 168.93	70 <b>Yb</b> 173.04	71 <b>Lu</b> 174.97
	90 <b>Th</b> 232.04	91 <b>Pa</b> 231.04	92 <b>U</b> 238.03	93 <b>Np</b> (237)	94 <b>Pu</b> (244.1)	95 <b>Am</b> (243.1)	96 <b>Cm</b> (247.1)	97 <b>Bk</b> (247.1)	98 <b>Cf</b> (251.1)	99 <b>Es</b> (252.1)	100 <b>Fm</b> (257.1)	101 <b>Md</b> (258.1)	102 <b>No</b> (259.1)	103 <b>Lr</b> (262.1)

1. Explain the periodic trends in atomic size and what causes the atomic radius to increase. (30 seconds)
2. Using the periodic trends in electron affinities. (30 seconds)
3. Explain how the relative chemical reactivity of the alkali metals can be explained using the Periodic Table. (60 seconds)

Examine the equation below that describes a chemical reaction  
(*section 4.2 in the textbook*)



4. Identify and explain this type of reaction, including the relationships between the negative and positive ion partners. (60 seconds)
5. A student does not understand the concept of limiting reactants. Explain this concept and describe what the other reactants are called in a reaction that has limiting reactants (*section 3.7 in the textbook*). (30 seconds)
6. Describe the differences between a solvent and a solute. (*section 13.3 in the textbook*). (45 seconds)
7. Explain the difference between Bronsted Acids and Bases and Lewis acids and bases, and how the two definitions are related. (*section 16.11 in the textbook*). (60 seconds)

Now I'd like to hear your ideas on some very basic chemistry questions. Be sure to say as much as you can in responding to each question.

8. Describe the difference between physical properties and chemical properties. (*section 1.3 in the textbook*). (60 seconds)

9. Describe the difference between physical changes and chemical changes. (*section 1.3 in the textbook*). (60 seconds)

The Activation Series Table below describes oxidation patterns and properties for various elements. (section 4.4 in the textbook).

<b>Metal</b>	<b>Oxidation Reaction</b>
Lithium	$\text{Li} \rightarrow \text{Li}^+ + \text{e}^-$
Potassium	$\text{K} \rightarrow \text{K}^+ + \text{e}^-$
Barium	$\text{Ba} \rightarrow \text{Ba}^{2+} + 2\text{e}^-$
Calcium	$\text{Ca} \rightarrow \text{Ca}^{2+} + 2\text{e}^-$
Sodium	$\text{Na} \rightarrow \text{Na}^+ + \text{e}^-$
Magnesium	$\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$
Aluminum	$\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^-$
<b>Zinc</b>	<b><math>\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-</math></b>
Chromium	$\text{Cr} \rightarrow \text{Cr}^{3+} + 3\text{e}^-$
Iron	$\text{Fe} \rightarrow \text{Fe}^{2+} + 2\text{e}^-$
Cobalt	$\text{Co} \rightarrow \text{Co}^{2+} + 2\text{e}^-$
Nickel	$\text{Ni} \rightarrow \text{Ni}^{2+} + 2\text{e}^-$
Tin	$\text{Sn} \rightarrow \text{Sn}^{2+} + 2\text{e}^-$
Lead	$\text{Pb} \rightarrow \text{Pb}^{2+} + 2\text{e}^-$
Hydrogen	$\text{H}_2 \rightarrow 2\text{H}^+ + 2\text{e}^-$
<b>Copper</b>	<b><math>\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-</math></b>
Silver	$\text{Ag} \rightarrow \text{Ag}^+ + \text{e}^-$
Mercury	$\text{Hg} \rightarrow \text{Hg}^{2+} + 2\text{e}^-$
Platinum	$\text{Pt} \rightarrow \text{Pt}^{2+} + 2\text{e}^-$
Gold	$\text{Au} \rightarrow \text{Au}^{3+} + 3\text{e}^-$



10. Explain what the activity series is used for and how you can tell whether a metal can be oxidized or not by a certain element in this table. (60 seconds)

11. Explain the concept of Electronegativity and its relationship with the polarity of a molecule.

12. Now imagine that you are TA'ing an organic chemistry class. The following changes need to be made to the syllabus. Please announce these changes to your class. (90 seconds)

## CHM 100: Organic Chemistry

### Exam/Problem Set Schedule, Tentative Lecture Schedule

Aug 25 – Sept 5th - Introduction and Review  
Sep 8 – Sep 15th - Organic ~~Molecules~~ **Structure**  
*Sep 10 – Problem set #1 available on the web site*  
**Sep 16 – Midterm Exam #1: Emphasis on Ch 1-3**  
**Sep 21** — ~~Sep 20 – Unrestricted Withdrawal Deadline~~  
Sep 19-24 – Bonding and Alkanes  
Sep 26-Oct 1 – Studying Reactions  
*Oct 2nd – Quiz #1 available on the website (covering material from the beginning of the semester, Due ~~Oct 5th~~)* **Oct 6th**  
*Oct 6th – Problem set #2 available ~~online~~* **distributed in class**  
**Oct 14th – Midterm #2: Emphasis on chapters 3-5**  
Oct 15th – 27th Spectroscopy ~~and Stereochemistry~~ — **deleted**  
*Oct 16th – Quiz #2 available on website (covering material since Quiz #1, Due Oct 20th)*  
Oct 16th- Nov 7th – Alkyl Halides  
*Oct 31st – Restricted Course Withdrawal Deadline*  
Nov 4th – Problem Set #3 available on website **AND 13**  
**Nov 11th – Midterm Exam #3: Emphasis on Ch 6,11,12** ^  
Nov 13th- 21st – Alkenes I  
Nov 23rd – Dec 7th – ~~Alkenes II~~ **Alkynes**  
*Dec 4th – Complete Withdrawal Deadline* **Dec 6th**  
*Dec 5th – Quiz # 3 and Problem Set #4 available on the website. (Quiz due Dec 7th)*  
— ~~Dec 11th~~ – (7:40-10:30) **Final Exam**  
**Dec 12th**