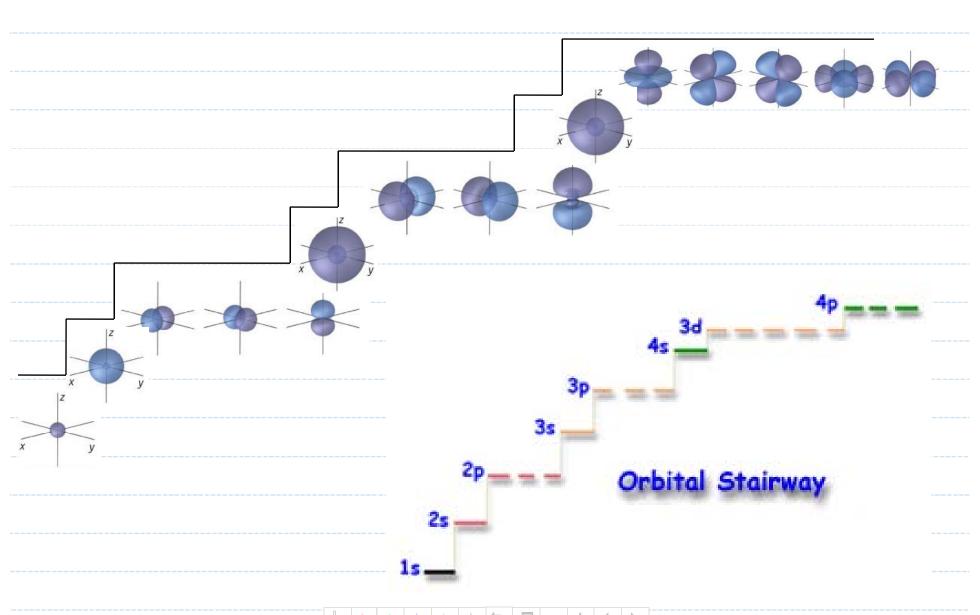
Announcements - Lecture VII- Tuesday, Sep 23rd

- 1. Exam I Tuesday, September 30th In Class
- 2. Second Lab Saturday, October 4th ... 1-4pm ... ISB 155/160 (A-E)
 - a) Print lab prior to coming to lab -- use the 'Print Friendly Version' located on the top left hand side of the page this is the version that contains the 'Data Sheet' that you will hand in upon completing the lab.
 - b) First set of Lab Owls will appear in Owl after this lab. There are a total of 4 sets of Lab Owls and they are worth 25% of the Lab Grade.



	7 TOTAL	Type	Number	
	11	15	1	
	ય 4	, 2s	1	
		L 2p	3	
		·		
	3 9	35	1	
		1 Зр	3	
		1 1 3d	5	
L	† 16	45	1	
		L 4p	3	
		 4d	5	

A Orbital Stairway



			OR	BITA	L Box	_					
Gp		#e	1s	2s	2р	3s	3р	Electronic Configuration	Noble Gas	Valence	Lewis Dot
1 <i>A</i>	Н	1					1,7	15 ^l			н
8 <i>A</i>	He	2 D						152		2	He
				П				3		İ	Ĭ
1 <i>A</i>	Li	3	<u>ry</u>	1		Ш		1525			Li
2A	Be	4	11	<u>t\</u>				152252			Be
3 <i>A</i>	В	5	11	11	<u>, </u>			1525229			В
4 <i>A</i>	С	€ ②	th.	11/	f			15252092			С
5 <i>A</i>	Ν	7	11	13	111			1528 ² 29 ³			N
6A	0	8	[}	11	111			152252894			0
7 <i>A</i>	F	9	14	U U	7141			15282295			F
8.4	Ne	10	14	14	11111			152952AP6			Ne

Gp		#e	1s	25	2p	35	3р	Electronic Configuration	Noble Gas	Valence	Lewis Dot
1 <i>A</i>	Na	11	14	14	etete	1		15252206351	(acamout with		Nα
2 <i>A</i>	Мд	12	<u>I</u>	14	1111	11		15252 2p6552			Mg
3 <i>A</i>	Al	13	11	11	11 11 11	T.		15225206352301			Al
4 <i>A</i>	Si	14	11	1	17 11 11	11	Tt	15252 206 352 3p2			Si
5 <i>A</i>	P	15	1	11	th th th	11	111	15 ² 25 ² 29 ⁶ 35 ² 39 ³			P
6 <i>A</i>	5	16	11	11	11 11 11	11	the c	15225-2p63523p4			5
7A	CI	17	†	1	an in th	14	1141	1522522p63523p5			CI
8.4	Ar	18	11	1↓	11 11 11	11	1444	15 ² 25 ² 29 ⁶ 35 ² 39 ⁶			Ar

			Of	RBITI	al Box					4	
Gp		#e	1s	2s	2р	3s	3р	Electronic Configuration	Noble Gas	Valence	Lewis Dot
1 <i>A</i>	Н	1				y		15 ¹	15 ¹	1	н•
8.4	He	2 1	11			Ц		15²	15 ²	2	He:
				\Box		\Box		3	1	Ī	i
1A	Li	3	11	Ł	Ш			<u>15°25'</u>	[He] 25'	ì	Li•
2A	Be	4		11				15 ² 25 ²	[He]252	2	Be:
3A	В	5	11	17		Ш		<u>15-25-20'</u>	[He]2522P1	3	В:
4A	С	6 ②	11,	14				15 25 2P2	[He]25 ² 2p ²	4	· C:
5A	Ν	7	14	14	111			45 25 2p3	[He]25 ² 2p ³	5	·N
6A	0	8	11/	11	<u>(1</u> † †			15252p4	[He]2522P4	6	0:
7A	F	9	11	14	11,11,1	Ш		45 ² 25 ² 2p ⁵	[He]25 ² 2p ⁵	7	F
8.4	Ne	10	14	11	11 1111			15 25 296	[He]25 ² 296	8	Ne

Gp		#e	1s	2s	2p	35	3р	Electronic Configuration	Noble Gas	Valence	Lewis Dot
1 <i>A</i>	Na	11	11	11	tratt	1		15 25 2p 351	[Ne] 351	1	Na•
2 <i>A</i>	Мд	12	11	11	nun	11		15 25 20 352	[Ne] 352	2	Mg:
3 <i>A</i>	Al	13	11	11	t ti ti	11	r	15252p6353p1	[Ne] 35°391	3	ĂI:
4 <i>A</i>	Si	14	11	11	17 1717	11	111	15252pb 3523p2	[Ne] 3523p2	4	• Si
5 <i>A</i>	P	15	11	11	171717	11	111	15 ² 25 ² 29 ⁶ 35 ² 39 ³	[Ne]35 ² 3p ³	5	• P:
6A	5	16	11	11	11 1111	11	thr	15 ² 25 ² 2pb 35 ² 3p4	[Ne] 35 ² 3p4	6	•5
7A	CI	17	11	11	11 11 11	14	11111	15 25 2pb 35 3p5	[Ne] 35 ² 3p5	7	; cı:
8.4	Ar	18	11	1	tat	CL.	than th	15-25 ² 29 35-396	[Ne] 35 ² 3p6	8	Ar



- 2. Hund Orbitals on the same level are filled singly first, then they are paired up.
- 3. Noble gas electrons Their stability precludes them from any desire to get univolved in any chemistry! ... under normal circunstances.
- 4. Valence Electrons

 Jor Main Group elements... He total number of electrons occupying the highest n valued or litals

I: [Kr] 552 4d10 5p5 ... 7 valence electrons

Transition Metals

He: 2



> 18 = [Ar]

Ne: 10

Ar: 18

Kr: 36

-	$\overset{21}{\mathbf{Sc}}$	²² Ti	$\overset{23}{\mathbf{V}}$	Cr	Mn 25	$\overset{26}{\mathrm{Fe}}$	27 Co	28 Ni	29 Cu	30 Zn
	Scandium	Titanium	Vanadium	Chromium	Manganese	Iron	Cobalt	Nickel	Copper	Zine
	44.9559	47.88	50.9415	51.9961	54.9380	55.847	58.9332	58.693	63.546	65.39

See chass web site to check on these predictions

21	5c :	[Ar] 45 ² 3d1	√	
22	T1:	[Ar] 45 ² 3d ²	√	
23	V :	[Ar] 45 ² 3d ³	✓	
24	Cr:	[Af] 45°3d ⁴	x actual [Ar]45'3d5	
25	Mn:	[Ar] 452 3d5	Predictions /	
26	Fe:	[Ar]45 ² 3d ⁶	✓	
มา	[o :	[Ar]45 ² 3d ⁷		
28	Ni:	[Ar]45 ² 3d ⁸		
29	[a:	[Ar] 4523d9	X Octual [Ar] 45'3d10	
30	Zn:	[Ar]45°3d"	√	
		<u> </u>	Slide - 64	

2.	6	Но	How Are the Electrons in an Atom Arranged?													
1 <i>A</i>	Li	3	↑↓	1		- 8			I		Ť	1s ² 2s ¹	[He]2s ¹	1	Li.	
2 <i>A</i>	Be	4	↑↓	↑↓								1s ² 2s ²	[He]2s²	2	Be:	
3 <i>A</i>	В	5	↑↓	↑↓	,	1			T			<mark>1s²</mark> 2s²2p¹	[He]2s²2p¹	3	ń;	
4 <i>A</i>	C	6	↑↓	↑↓	,	1					Ĵ	<mark>1s²</mark> 2s²2p²	[He]2s²2p²	4	·ė:	
5 <i>A</i>	Ν	7	↑↓	↑↓		1	1					1s²2s²2p³	[He]2s²2p³	5	·Ņ:	
6A	0	8	↑↓	↑↓	1	¥ 1	1			*		1s ² 2s ² 2p ⁴	[He]2s²2p⁴	6	·ö:	
7A	F	9	↑↓	↑↓	1	↓ ↑	↓ ↑			y - s		1s²2s²2p⁵	[He]2s²2p⁵	7	:F:	
8.4	Ne	10	↑↓	↑↓	1	1	↓↑↓					<mark>1s²</mark> 2s²2p ⁶	[He]2s²2p6	8	:Ne:	
															5.	
1 <i>A</i>	Na	11	↑↓	↑↓	1	↓ ↑	↓ ↑↓	1				1s ² 2s ² 2p ⁶ 3s ¹	[Ne] 3s1	1	Na-	
2 <i>A</i>	Мд	12	↑↓	↑↓	1	1	↓↑↓	↑↓				1s ² 2s ² 2p ⁶ 3s ²	[Ne] 3s ²	2	Mg;	
3 <i>A</i>	Al	13	↑↓	↑↓	1	1	↓ ↑↓	↑↓	1			1s ² 2s ² 2p ⁶ 3s ² 3p ¹	[Ne] 3s²3p¹	3	AÌ;	
4A	Si	14	↑↓	↑↓	1	↓ ↑	↓↑↓	↑↓	1	1		1s ² 2s ² 2p ⁶ 3s ² 3p ²	[Ne] 3s ² 3p ²	4	'Si'	
5 <i>A</i>	Р	15	↑↓	↑↓	1	\	↓↑↓	↑↓	1	1	1	<mark>1s²2s²2p⁶</mark> 3s ² 3p ³	[Ne] 3s ² 3p ³	5	· 6:	
6 <i>A</i>	s	16	↑↓	↑↓	1	1	↓↑↓	↑↓	1	↓ ↑	1	1s ² 2s ² 2p ⁶ 3s ² 3p ⁴	[Ne] 3s ² 3p ⁴	6	·\$:	
74	CI	17	↑↓	↑↓	1	↓ ↑	↓↑↓	↑↓	1	↓ ↑↓	↑	1s ² 2s ² 2p ⁶ 3s ² 3p ⁵	[Ne] 3s ² 3p ⁵	7	içi	
8.4	Ar	18	↑↓	↑↓	1	↓ ↑	↓↑↓	↑↓	1	↓ ↑↓	↑↓	<mark>1s²2s²2p</mark> 63s²3p6	[Ne] 3s ² 3p ⁶	8	·삼:	