

Chem 106: Class/Lab Week 6

Sign in: Roster @ front of lab
Pick up graded papers
Exam 1: Last 90 min. of Lab

Turn in before Exam 1 begins:

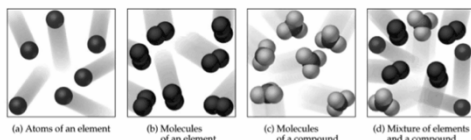
1. Atoms & Subatomic Particles (Course/ Lab Manual pg. 31)
2. Build an Atom Simulation & Worksheet (Course/ Lab Manual pp. 27-30)

CHEM 106

Experiment: Classification of Matter

Chemical Visualization: Atoms & Molecules

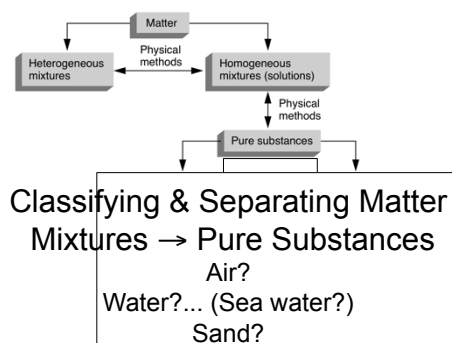
Atomic Force Microscopy / Molecular Modeling
Experimental / Mathematical



$Solid (s) \rightleftharpoons Liquid (l) \rightleftharpoons Gas (g)$

mass = extensive; volume = extensive

Chemistry & Matter

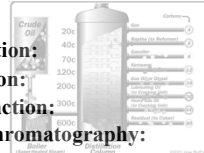


Classification of Matter and Chemical Change

<http://www.chemconnections.org/general/chem108/Phys%20Properties-Separations%202017.htm>



Filtration:
Crystallization:
Distillation:
Extraction:
Chromatography:



<http://chemconnections.org/general/movies/html-swf/oil-refining.swf>

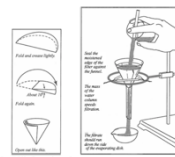
Classification of Matter and Chemical Change

- Goals:
 - Part I: To classify a pure substance as a homogeneous or heterogeneous mixture and to quantitatively separate the mixture's components
 - Part II (next lab not today): Using Paper Chromatography to classify inks as pure substances or homogeneous mixtures
- Work with a partner
 - Be sure to write both partners' full name ON REPORT FORM

Chem 106: Class/ Lab

TODAY

Physical and Chemical Properties: Separations: pp. 19-23



Reading/Doing:

1. Question #1, pg 21: Complete page, have Dr. R. check, and provide an unknown
2. Must complete modified Part I today, record your data & have Dr. R. initial data page before Exam 1

Classification of Matter and Chemical Change

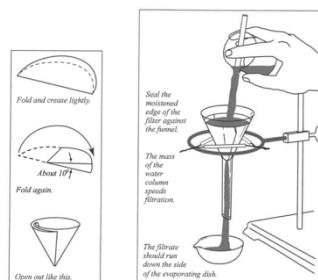
Measuring solids (Part I Reminders):

- 1) Weigh empty container (beaker) & record mass
- 2) Remove beaker from balance and pour solid into the beaker
- 3) Place the beaker with the solid back on the balance & record mass

DO NOT pour any materials/ chemical into containers while on balance pan; clean area and balance of any loose /spilled materials/ chemicals before leaving, close all bottles

Classification of Matter

Separating Mixtures: Filtration



Part I: Filtration

➤ Use a minimal amount of H_2O when transferring solids from beaker into filter; too much causes evaporation time to be VERY long

➤ PROCEDURE to note & follow:

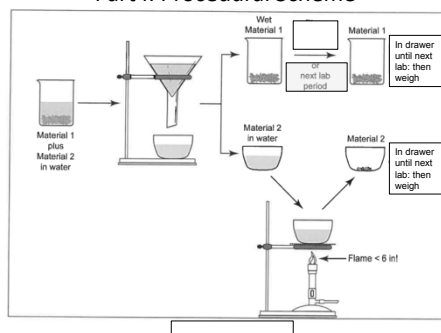
- Boil filtrate *gently* until no drops are observed on watch glass
 - If boiled too rapidly, crystals collect on watch glass
 - SAFETY TIP: Hot evaporating dish will shatter if placed on cold lab bench – Allow to cool on grating before placing on bench
- DO NOT dry Material 1 and filter paper under heat lamp. Store in your lab drawer covered by paper towel . . . by the next lab session, they will be *very* dry

➤ WASTE: (*after next lab session*)

- Filter paper and Material 1 in trash
- Material 2 in sink with H_2O running

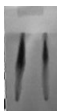
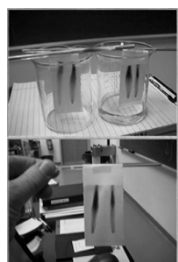
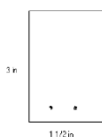
Classification of Matter

Part I: Procedural Scheme



NEXT LAB Classification of Matter

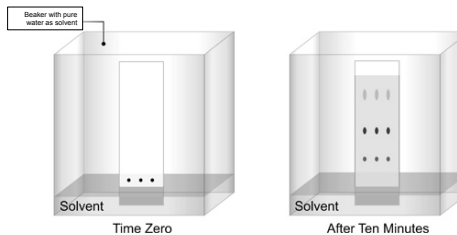
Part II – Paper Chromatography)



Part II – Paper Chromatography

➤ Use water-soluble pens that are provided, DO NOT use your own pen

➤ DO NOT use permanent pens/markers



➤ Waste: water in sink

Experiment – Classification of Matter

- Complete Parts I & II (next Lab)
Report Form Due: *One form for each team of lab partners.*
- Check sig figs are correct and units included
- Show example of calculations
- Answer questions legibly in complete sentences.

DUE End of Next Lab Period

Los Alamos National Laboratory Chemistry Division

Periodic Table of the Elements

1A	1	H	2A	2	He	8A	2	He																												
3	Li	4	Be	5	B	6	C	7	N	8	O	9	F	10	Ne																					
11	Na	12	Mg	13	Al	14	Si	15	P	16	S	17	Cl	18	Ar																					
19	K	20	Ca	21	Sc	22	Ti	23	V	24	Cr	25	Mn	26	Fe	27	Co	28	Ni	29	Cu	30	Zn	31	Ga	32	Ge	33	As	34	Se	35	Br	36	Kr	
37	Rb	38	Sr	39	Y	40	Zr	41	Nb	42	Mo	43	Tc	44	Ru	45	Rh	46	Pd	47	Ag	48	Cd	49	In	50	Sn	51	Sb	52	Te	53	I	54	Xe	
55	Cs	56	Ba	*	57	La	58	Ce	59	Pr	60	Nd	61	Pm	62	Sm	63	Eu	64	Gd	65	Tb	66	Dy	67	Ho	68	Er	69	Tm	70	Yb	71	Lu		
87	Fr	88	Ra	**	89	Ac	90	Th	91	Pa	92	U	93	Np	94	Pu	95	Am	96	Cm	97	Bk	98	Cf	99	Es	100	Fm	101	Md	102	No	103	Lr		
101	Db	102	Sg		103	Bh	104	Hs	105	Mt	106	Ds	107	Rg	108	Cn	109	Nh	110	Fl	111	Mc	112	Lv	113	Ts	114	Og	115		116		117		118	

Lanthanide Series*
Actinide Series**

Los Alamos
NATIONAL LABORATORY

CHEMISTRY

Chem 106: Exam 1

Pick up Scantron

Pick up calculator if needed. No smart phones allowed.

Do NOT turn exam over until instructed to do so.

DO WRITE on EXAM; use it as scratch paper as well.

Put your name on all materials.

Turn in all materials @ end of exam.