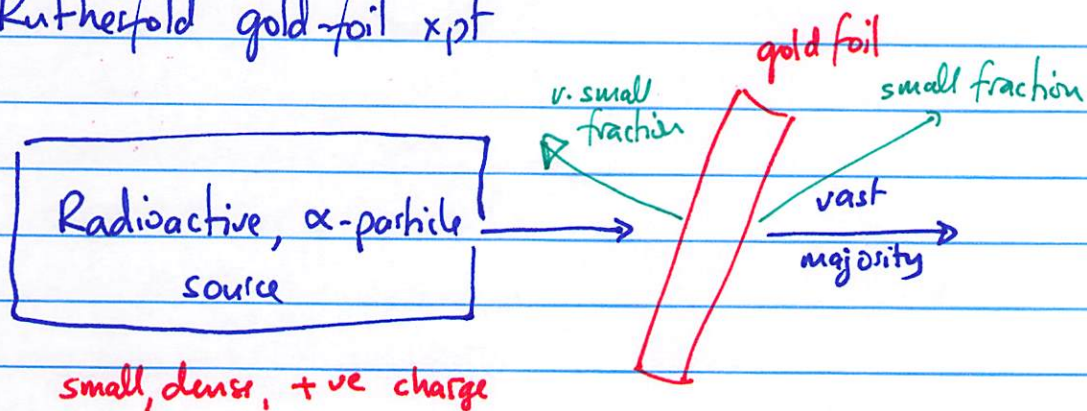


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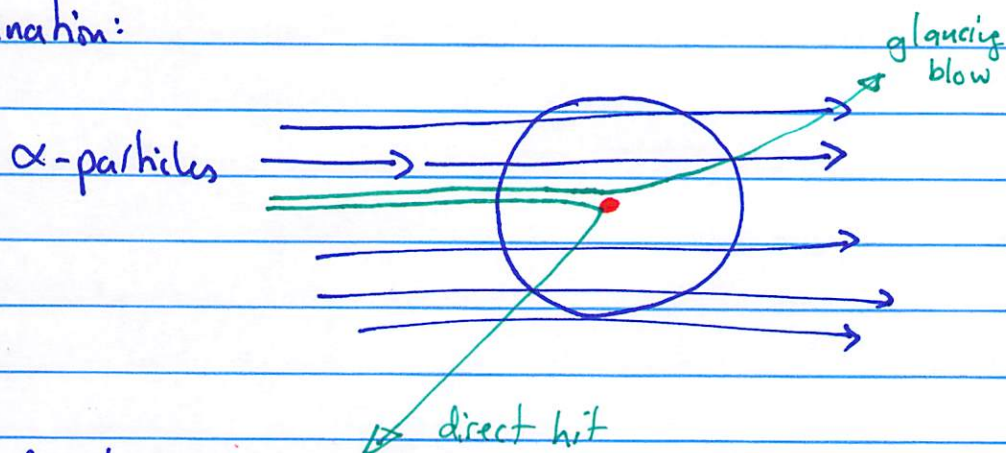
Read 2-4 ... discovery of electron

## Structure of the atom

Rutherford gold-foil xpt



explanation:



center of atom: NUCLEUS

- concentrated +ve charge
- very dense

most of atom has very little mass

- -ve charge (electrons)

Atoms are neutral  $\Rightarrow$  same # of + as -  
protons' electron

Later work by James Chadwick led to the discovery of the NEUTRON.

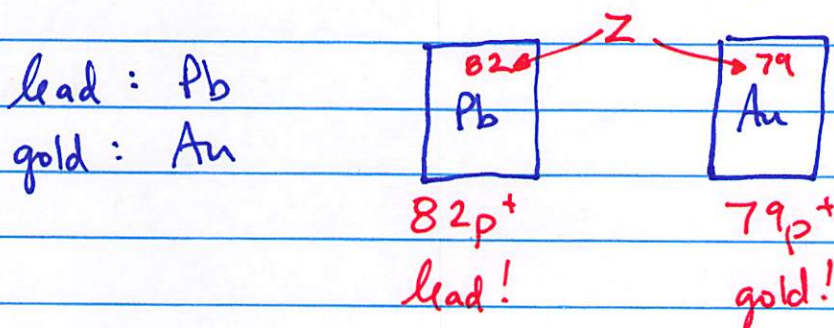
- "same" mass as a proton
- but no electric charge.

(sub-atomic... particle)  $1 \text{ amu} = 1 \text{ u} = \frac{1}{12}$  mass of a carbon-12 atom  
atomic mass unit

		mass/u	relative charge	
$p^+$	proton	$1.007 \approx 1$	$+1$	} nucleus
$n^0$	neutron	$1.009 \approx 1$	$0$	
$e^-$	electron	$0.00055 \approx 0$	$-1$	} $e^-$ cloud making up volume of atom

Q: What makes an atom of lead different from gold?  
what makes an atom of lead: lead?

- # $p^+$  in the nucleus determines the element type!
- called the atomic #, Z



Element symbols: 1 or 2 letters  
ex: C      Co      CO  
carbon      cobalt      carbon monoxide

1<sup>st</sup> = Capitalized  
2<sup>nd</sup> = lowercase



- memorize 1-36 (symbol + name) FIG 2-8  
p57

also: Rb, Sr, Cs, Ba, Fr, Ra  
Pd, Ag, Cd, Pt, Au, Hg  
In, Sn, I, Xe, Tl, Pb, Bi, Rn  
U

- Some symbols are based on latin names:

ex: Na (natrium) sodium  
Ag (argentum) silver.

- FLASHCARDS.

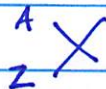
Atoms w/ same  $\#p^+$ , but diff.  $\#n^0$  are  
said to be ISOTOPES.

ex: Ne,  $Z=10, 10p^+$   
relative abundances

$A=20$	90.48%	have	$10n^0$	$10p^+$	} isotopes.
$A=21$	0.25%	have	$11n^0$	$10p^+$	
$A=22$	9.25%	have	$12n^0$	$10p^+$	

Mass  $\# = \#p^+ + \#n^0 = A$  — symbol.

Symbolize isotopes using:  
(nuclide symbol)



— element symbol

