

$\Delta H = -336 \text{ kJ}$ kJ 23g HCl formed

$\text{CH}_4(\text{g}) + 3\text{Cl}_2(\text{g}) \rightarrow \text{CHCl}_3(\text{l}) + 3\text{HCl}(\text{g}) \quad +336 \text{ kJ}$

23g HCl	1 mole HCl	336 kJ	= 71.56 kJ
	36g HCl	3 mole HCl	

Jan 27-9:51 AM

X Heat capacity/g

Lose 95g X at 75°C → 23°C

Gain 50g H₂O in c = 4.184 J/g°C 18°C → 23°C

Heat gained = Heat lost

$M_c \Delta T = M_c \Delta T$

$(50)(4.18)(5) = 95(c)(52)$

$c = 0.212 \text{ J/g}^\circ\text{C}$

Jan 27-9:59 AM

\textcircled{A} H $n=5 \rightarrow n=2$
 $E = R_H \left(\frac{1}{n_i^2} - \frac{1}{n_f^2} \right)$
 $E = 2.18 \times 10^{-18} \left(\frac{1}{5^2} - \frac{1}{2^2} \right)$
 $E = 4.578 \times 10^{-19} \text{ J}$
 $E = h f$
 $c = f \lambda$
 $f = \frac{c}{\lambda}$
 $\frac{E}{h} = \frac{hc}{\lambda}$
 $\frac{\lambda}{c} = \frac{hc}{E}$
 $\lambda = \frac{hc}{E}$
 $\lambda = \frac{(6.63 \times 10^{-34} \text{ J}\cdot\text{s})(3 \times 10^8 \text{ m/s})}{4.578 \times 10^{-19} \text{ J}}$
 $\lambda = 4.34469 \times 10^{-7} \text{ m} = 434 \text{ nm}$
 $n = 10^{-9} \text{ m}$

Jan 27-10:04 AM

$\Delta H_f \text{ Sulf} = 17.7 \text{ kJ/mole S}$
 $\textcircled{-9}$ 22.5 kJ

1 mole S	22.5 kJ	32 g S	= 40.68 g S
17.7 kJ		1 mole S	

Jan 27-10:11 AM

n	PEL	Sublevel	Orbital	S or Ms Spin
1		1s	$\frac{2e^- \uparrow \downarrow}{s}$	
2		2s 2p	$\frac{6e^-}{p} - 3$	
3		3s 3p 3d	$\frac{10e^-}{d} - 5$	
4		4s 4p 4d 4f	$\frac{14e^-}{f} - 7$	

$\begin{array}{c|c|c|c} s & p & d & f \\ \hline 0 & 1 & 2 & 3 \end{array}$
Principal quantum #

S+p on time

d 1 period late $3d \rightarrow 4d$ per

f 2 per. late $4f \rightarrow 6f$ per

Jan 27-10:15 AM

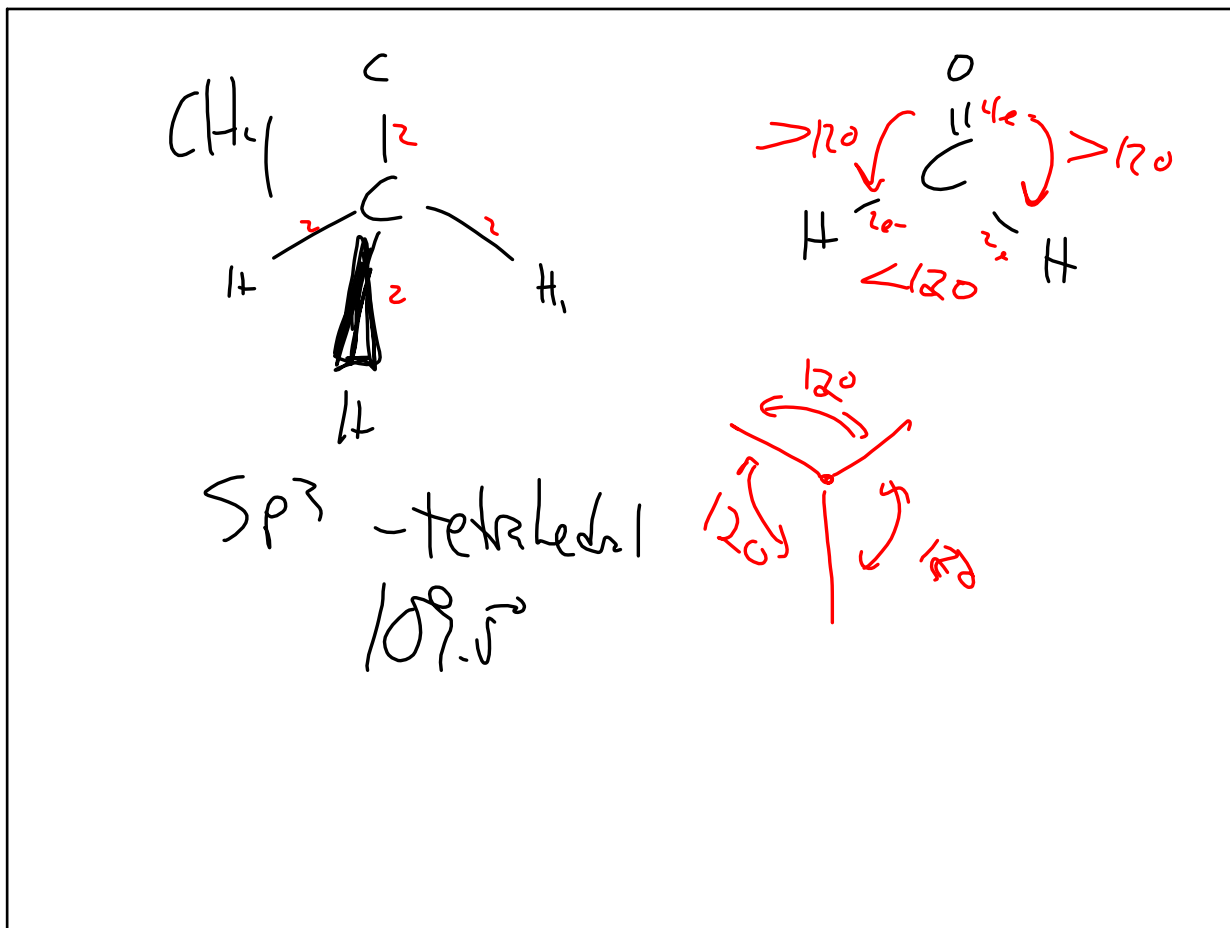
^{26}Fe

$1s^2 \quad 2s^2 2p^6 \quad 3s^2 3p^4 \quad 4s^2 3d^6$

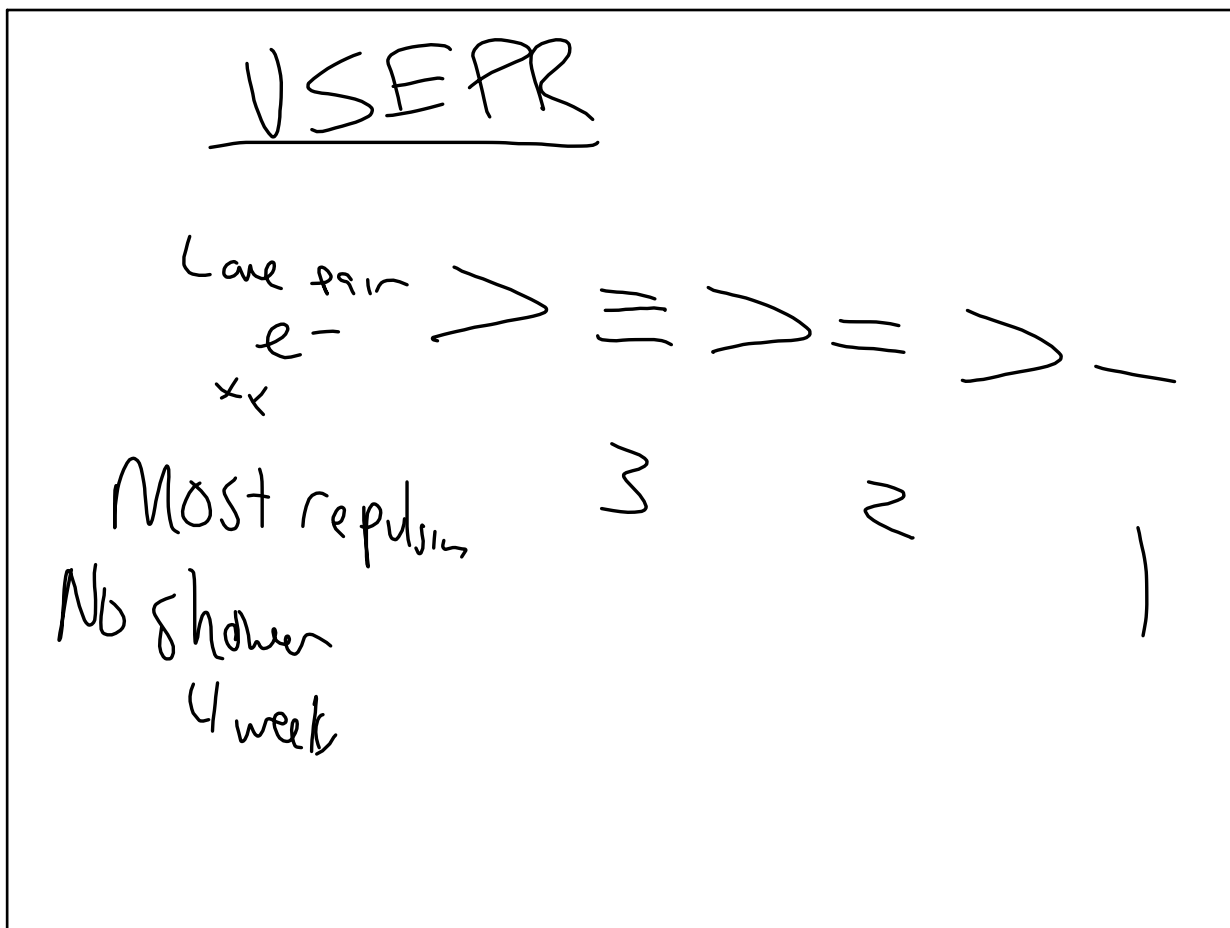
$[\text{Ar}] 4s^2 3d^6$

$\text{Fe}^{+2} \quad [\text{Ar}] 3d^6$

Jan 27-10:18 AM



Jan 27-10:22 AM



Jan 27-10:25 AM

1 Frame + 4 Tires \rightarrow 1 Car

50 \rightarrow ?

LR Used up

50 Frame	1 car
1 Frame	50 cars

50 tires	1 car
4 tires	12.5 cars

(R)

Jan 27-10:26 AM

$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

2g \rightarrow ? g

4g used up

2g H ₂	1 mole H ₂	2 mole H ₂ O
	2g H ₂	2 mole H ₂

= 1 mole H₂O

4g O ₂	1 mole O ₂	2 mole H ₂ O
	32g O ₂	1 mole O ₂

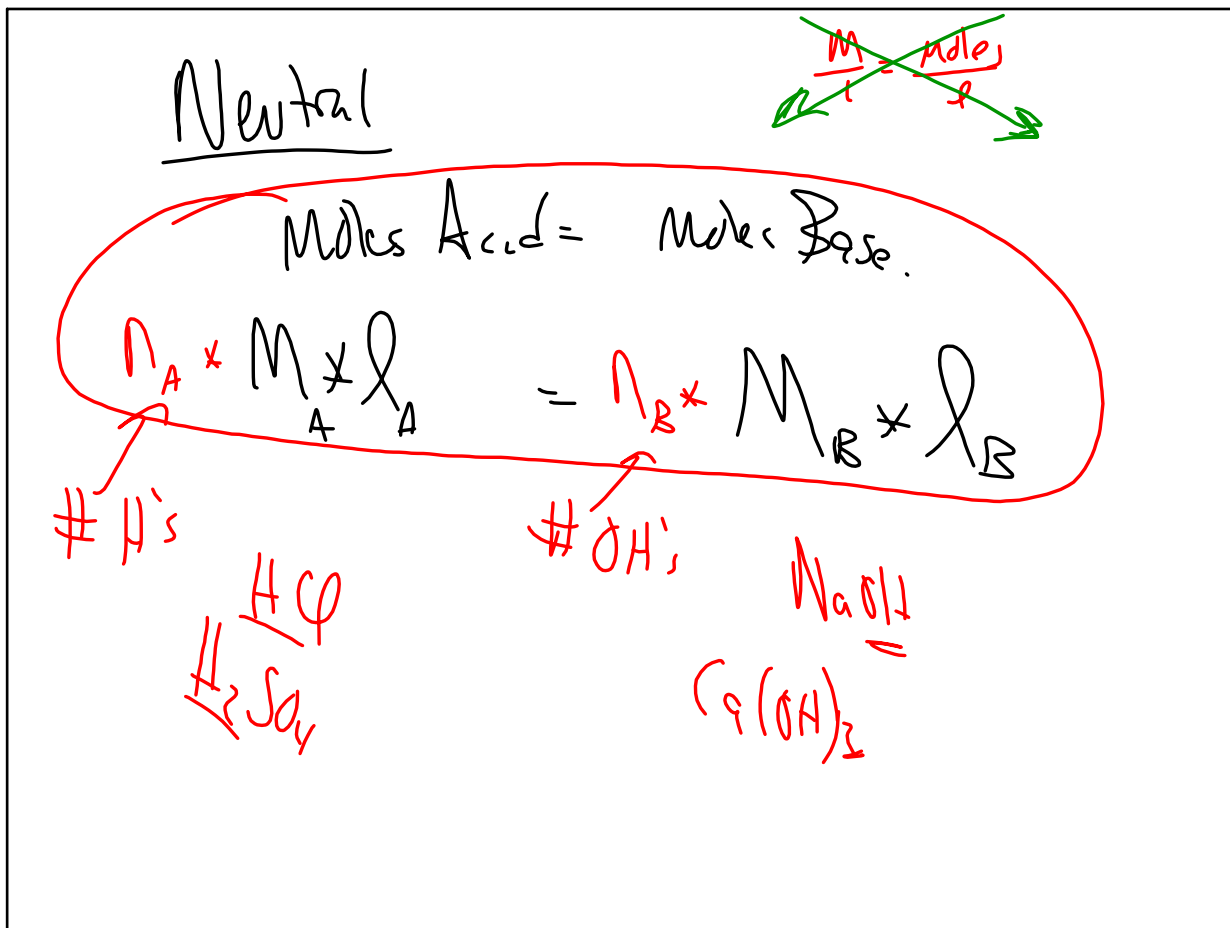
0.25 mole O₂

4g O ₂	1 mole O ₂	2g H ₂
	32g O ₂	1 mole O ₂

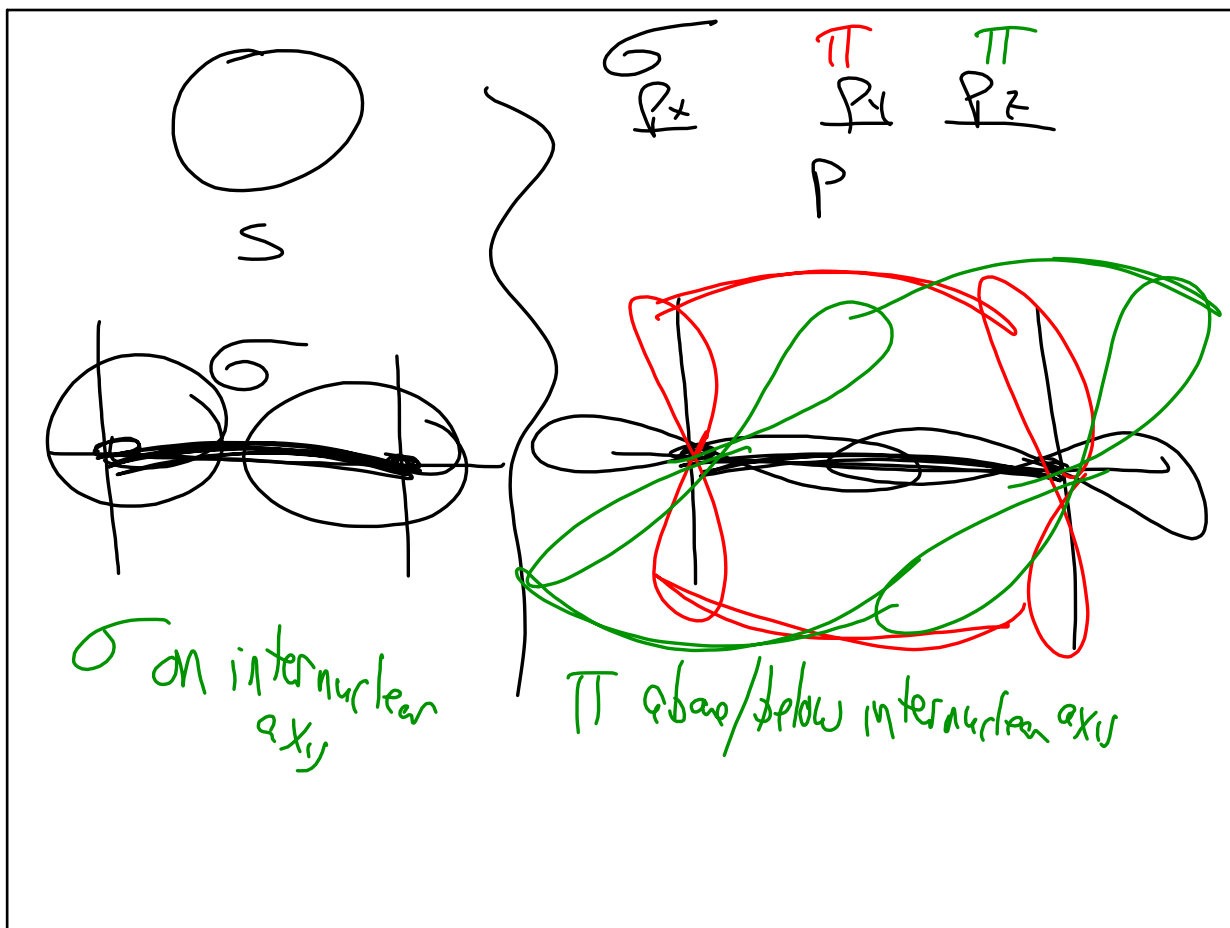
0.25g H₂ used

$2\text{g H}_2 - 0.25\text{g} = 1.75\text{g H}_2$ left over

Jan 27-10:29 AM



Jan 27-10:36 AM



Jan 27-10:40 AM