

**Today**

Electrophilic Aromatic Substitution  
8.16 - 8.21, 18.1 - 18.8

The affect of substituents on EAS  
Activators, deactivators and *o,p* vs *m*  
Directors  
Section 18.12, 18.13

**Second Class from Today**

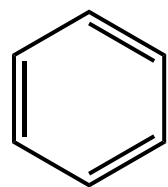
The affect of substituents on EAS:  
Activators, deactivators and *o,p* vs *m*  
Directors  
Section 18.12, 18.13

**Next Class**

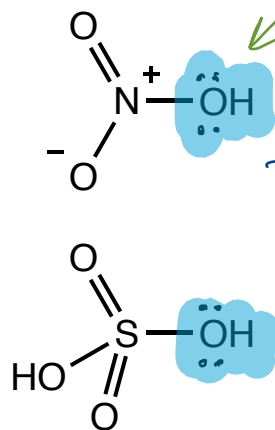
The affect of substituents on EAS  
Activators, deactivators and *o,p* vs *m* Directors  
Section 18.12, 18.13

**Third Class from Today**

The affect of substituents on EAS:  
Activators, deactivators and *o,p* vs *m* Directors  
Section 18.12 – 18.14



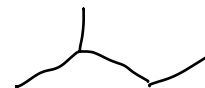
+



these lp e<sup>-</sup>'s will be attractive to acids... like the hydroxyl group in an alcohol

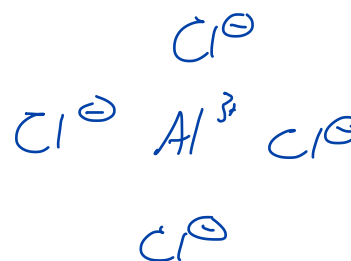
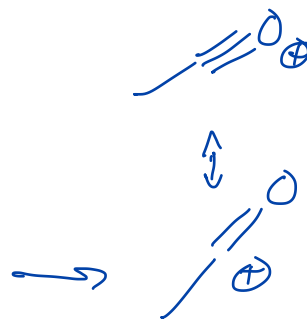
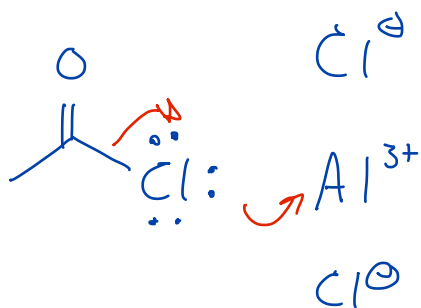
protonate these and turn them into good LG's

protonating the hydroxyl



group turned it into a good LG

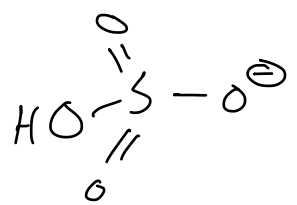
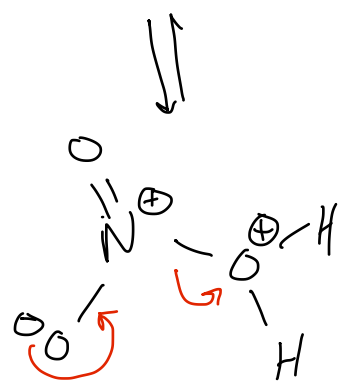
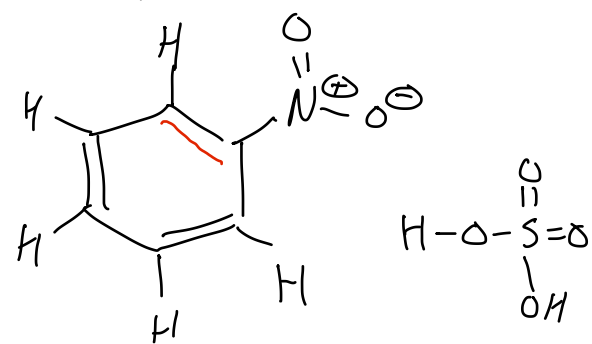
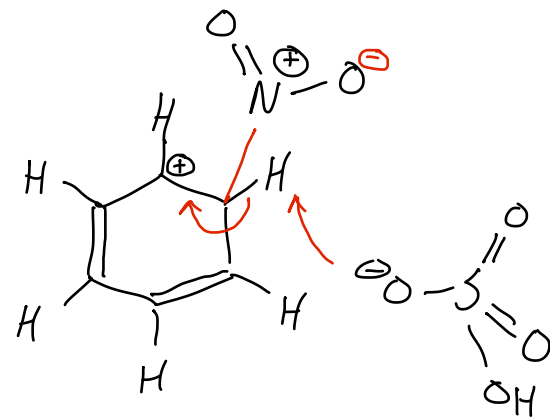
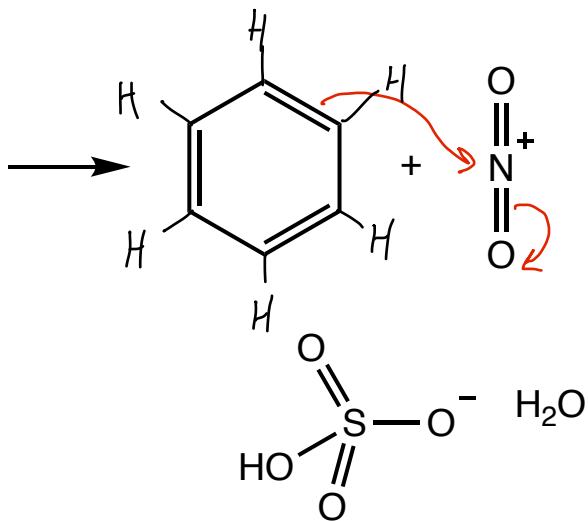
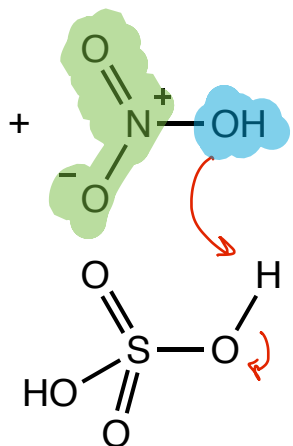
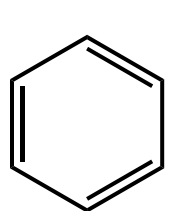
these electrophiles are not reactive enough to react with benzene



Nitration

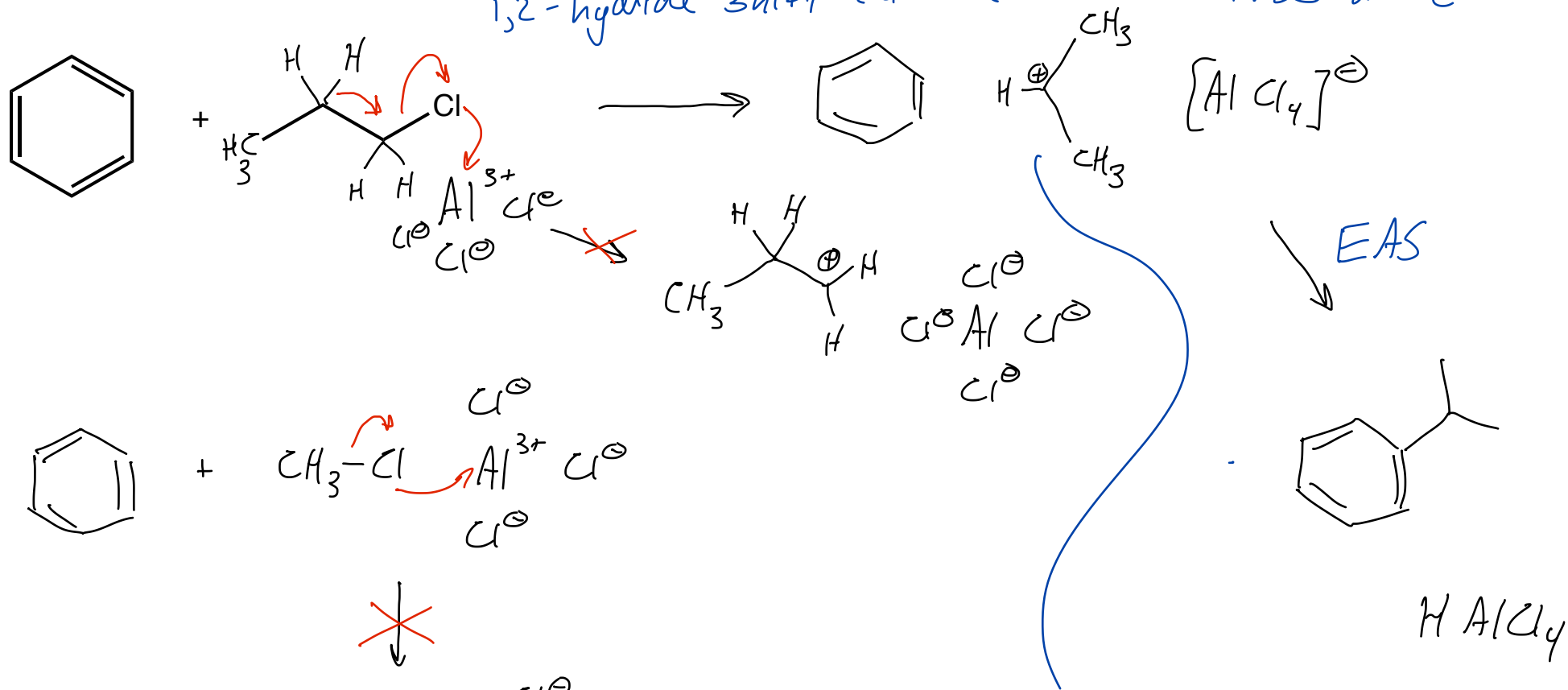
$\text{ONO}^{\oplus}$  nitronium

Sections 18.4





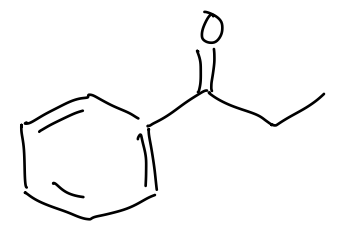
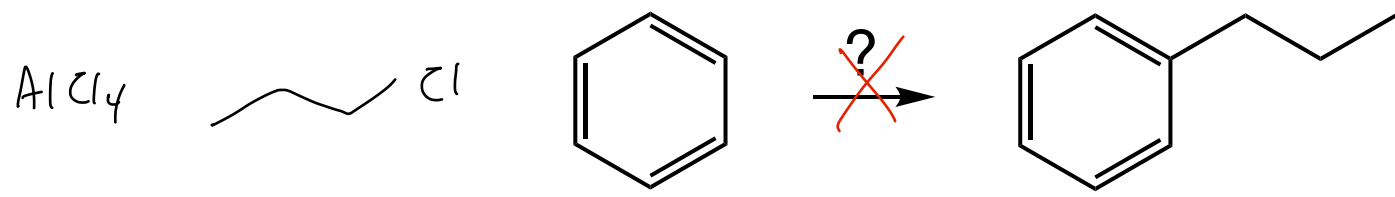
A Closer Look at Acylation and Alkylation  $Al^{3+}$  abstracts  $Cl^-$  because  $1,2$ -hydride shift can occur to make  $2^\circ C^+$  Section 18.8



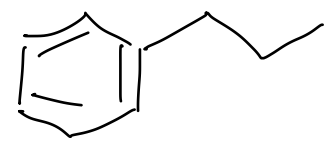
$Al^{3+}$  is not acidic enough to form a methyl cation

reaction occurs with rearranged  $c^+$ , not the original  $RCl$

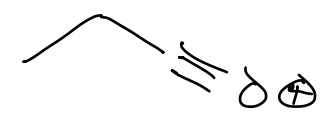
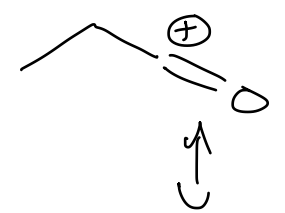
A Work Around? *yes*



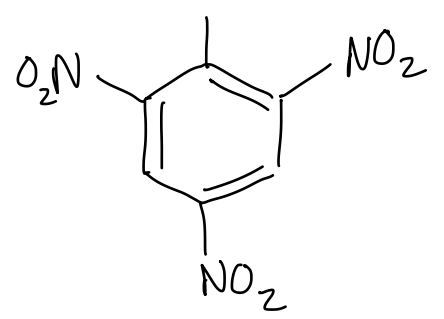
reduce using Raney Nickel catalyst  $C=O$  to  $CH_2$



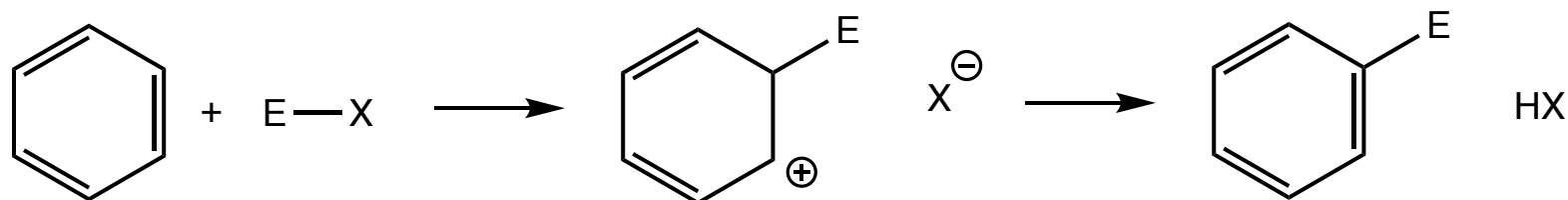
Form  $O$  stabilized  $C^+$



don't rearrange



TNT



Increase or decrease  $e^-$  density to make it more reactive toward EAS?

Increase  $e^-$  density

Move Electron Density Around Using....

stabilize the intermediate to make the reaction go faster