

LEC (13)

CHEM 30A

Feb 9th

(1)

— acids and bases

- ① STRUCTURE & ACIDITY
- ② PROTONATING ORGANIC STRUCTURES
- ③ LEWIS ACIDS / BASES

— organic reactions

- ④ TYPES
- ⑤ MECHANISMS
- ⑥ ENERGY DIAGRAMS (next lecture)

Finish problems 4.1 → 4.45

+ acid/base problem set on WEB

(Alkene intro)  
Read Ch 5, Problems 5.2, 5.6-5.10, 5.13-5.19  
6.1-6.3                      6.1, 6.2

① STRUCTURE & ACIDITY

- a) Electronegativity (of atom w/ -ve charge)
- b) Size (of atom w/ -ve charge)

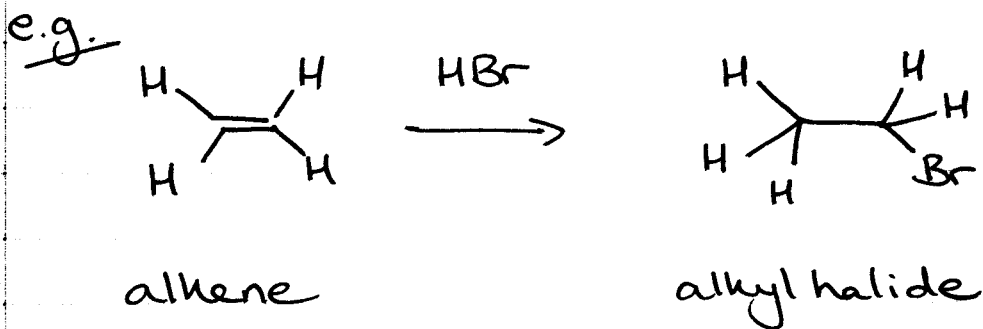
c) RESONANCE... continue

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— ORGANIC REACTIONS

④ TYPES

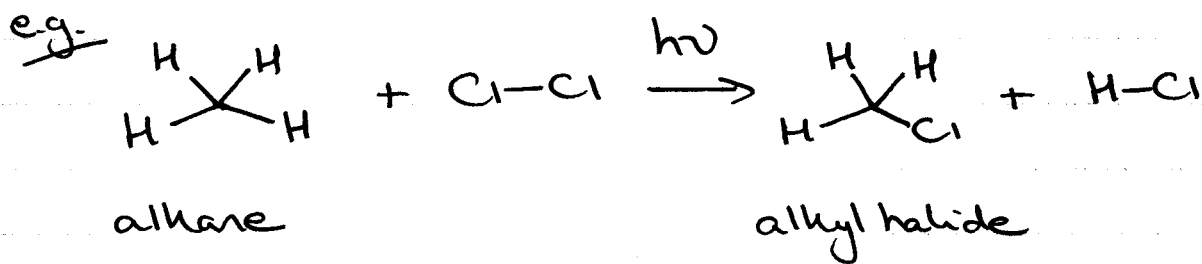
a) ADDITION ( $A + B \rightarrow C$ )



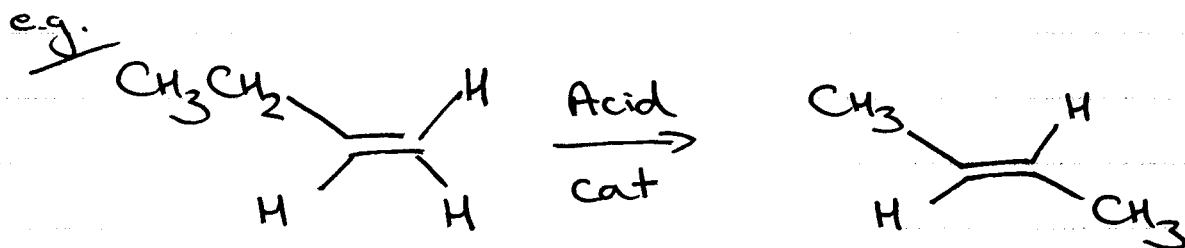
b) ELIMINATION (A → B + C)



c) SUBSTITUTION (A-B + C-D → A-C + B-D)



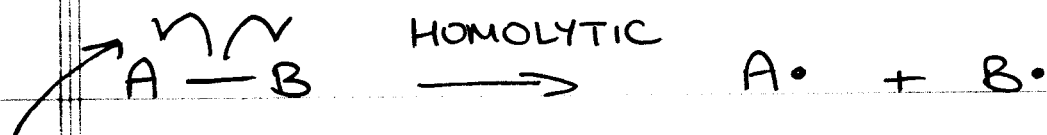
d) REARRANGEMENT (A → B)



⑤ MECHANISMS

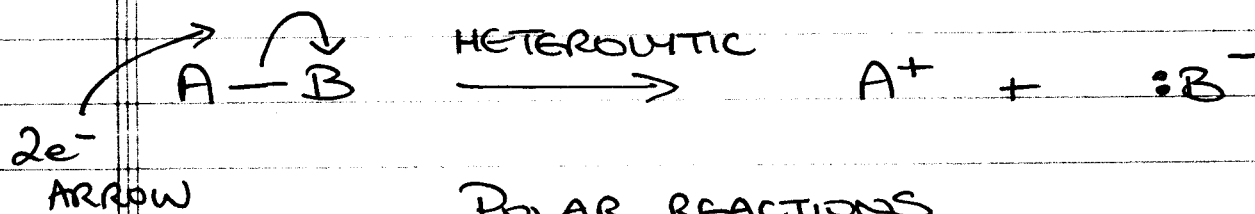
BOND MAKING / BOND BREAKING

- BOND BREAKING



1e<sup>-</sup> ARROW

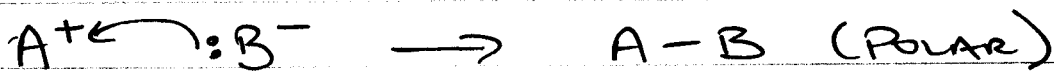
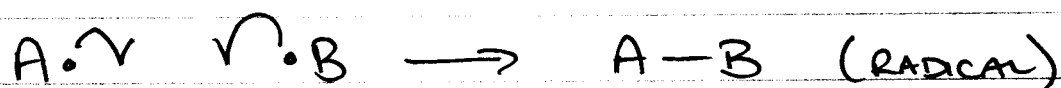
RADICAL REACTIONS → a radical is a neutral chemical species that contains a single unpaired electron



2e<sup>-</sup> ARROW

POLAR REACTIONS

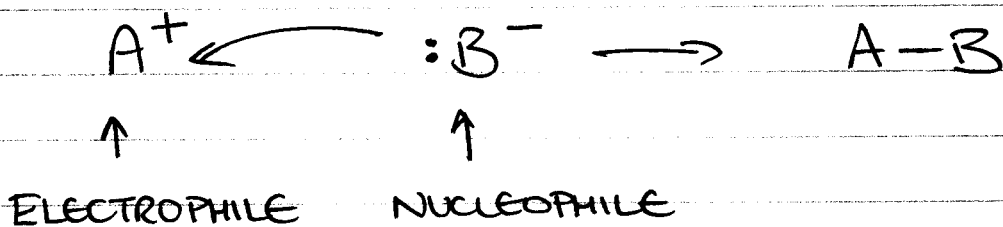
- BOND MAKING



- POLAR REACTIONS

(radical reactions at end of course)

e<sup>-</sup> rich sites in one molecule react with e<sup>-</sup> poor sites in another molecule

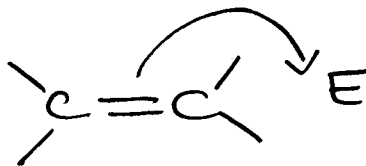
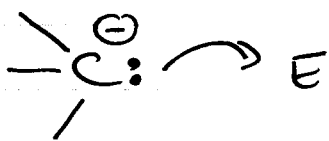
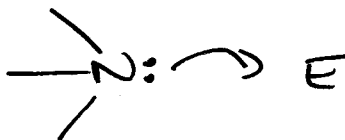


Nucleophiles : have an  $e^-$  rich atom  
and are NEUTRAL or -VERY  
charged

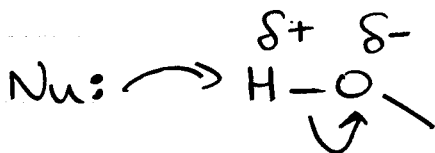
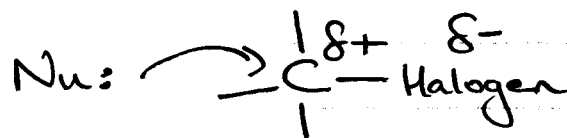
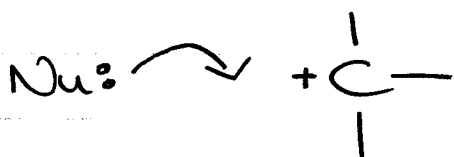
Electrophiles : have an  $e^-$  poor atom  
and are NEUTRAL or +VERY  
charged

### Patterns

Electrons flow from nucleophiles

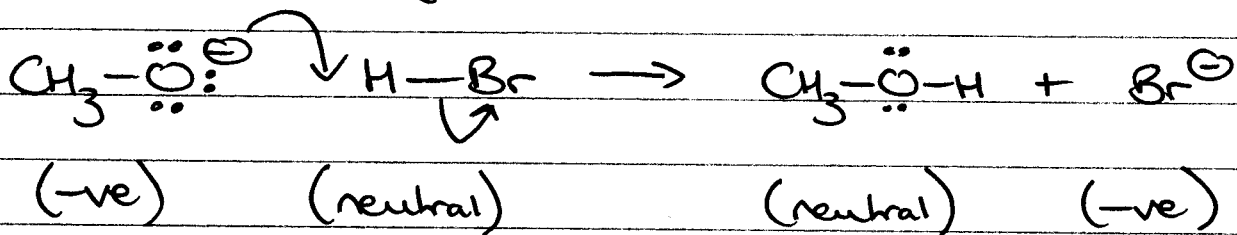


Electrons flow to electrophiles



## RULES

- conserve charge



- octet rule must be obeyed (if necessary)

