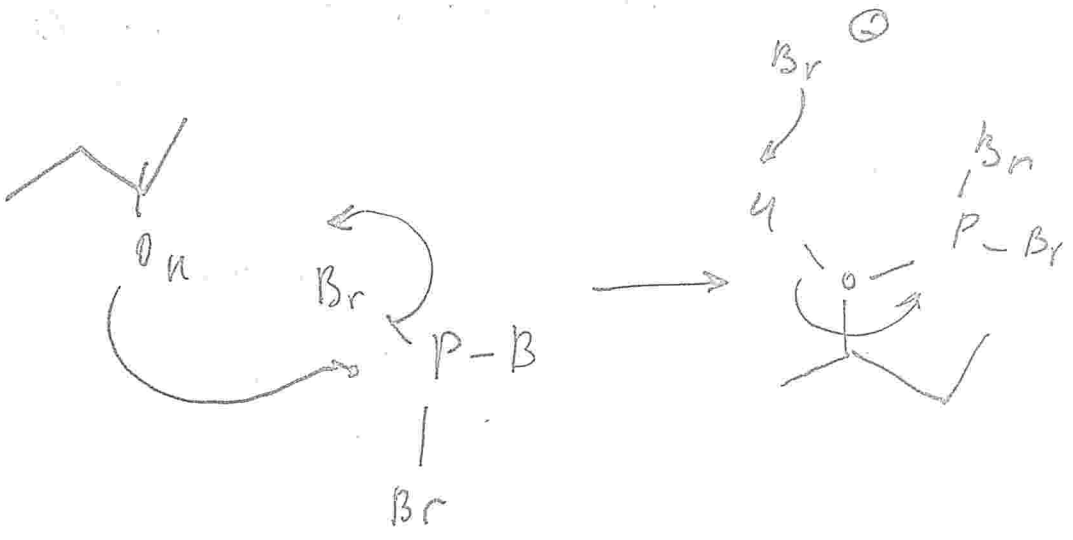
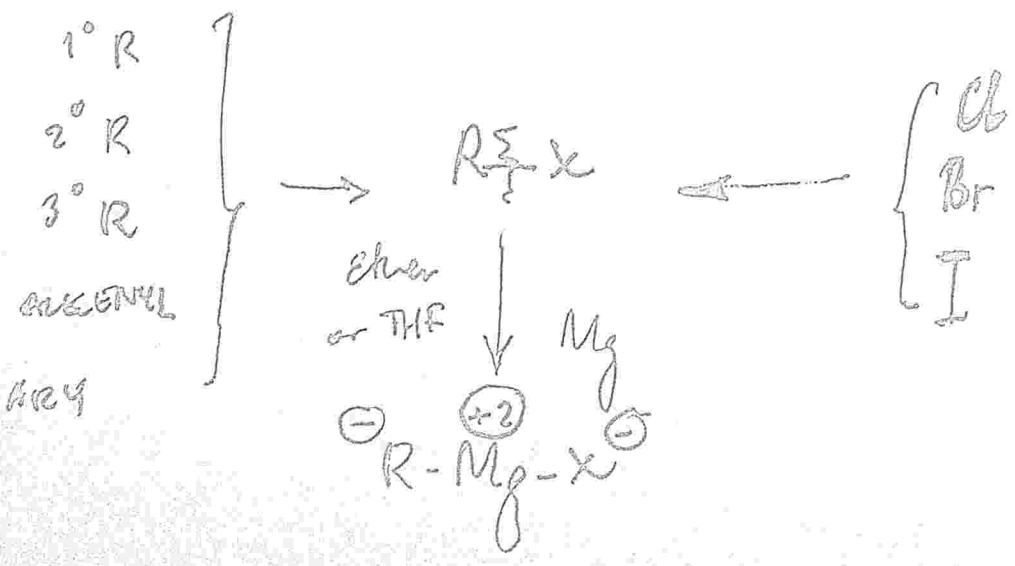
CHM151: 20161002

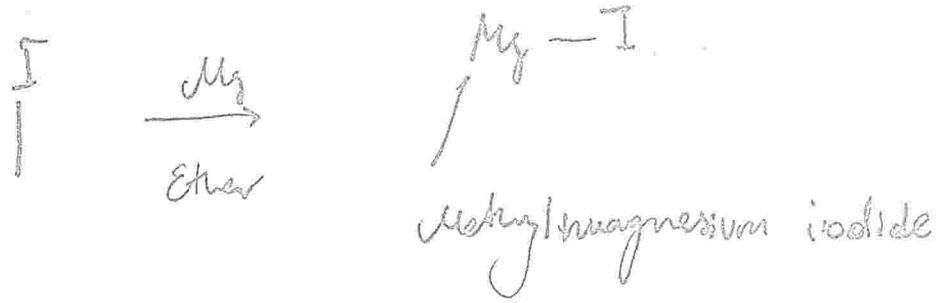
ALKYL HALIDES II



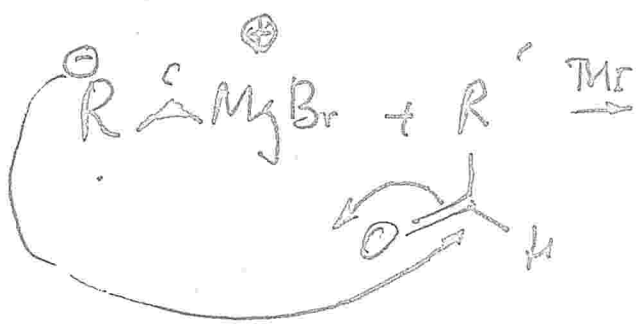
PREPARING GRIGNARD REAGENTS FROM ORGANOHALIDES

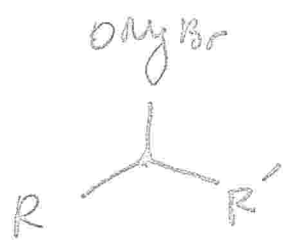
MAGNESIUM INSERTS INTO C-I, C-Br AND C-Cl BONDS






# GRIGNARD REAGENTS : PREVIEW OF REACTIVITY

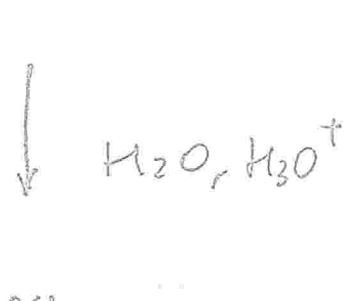




R

PROTONATION




CHM151 20161102

ALKYL HALIDES III

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NUCLEOPHILIC SUBSTITUTION

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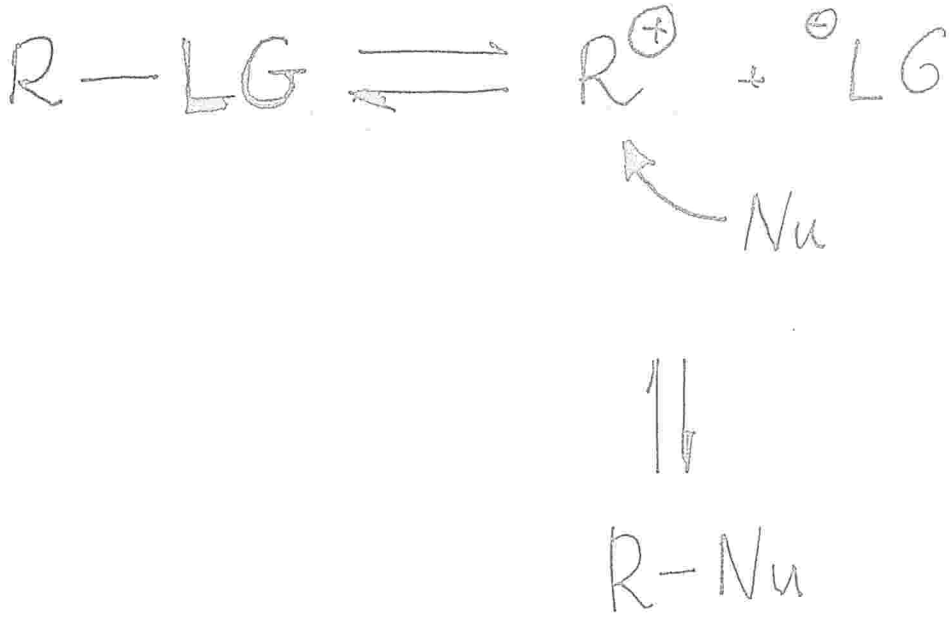
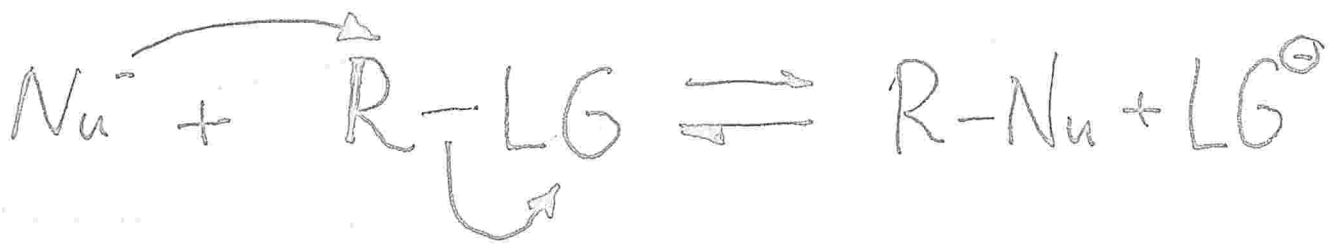
$S_N1$:




$S_N2$:



SN1 : UNIMOLECULAR RATE-DETERMINING STEP

$$\frac{dP}{dt} = k\,[RX]$$

SN2 : BIMOLECULAR RATE-DETERMINING STEP

$$\frac{dP}{dt} = k\,[RX][Nu^-]$$

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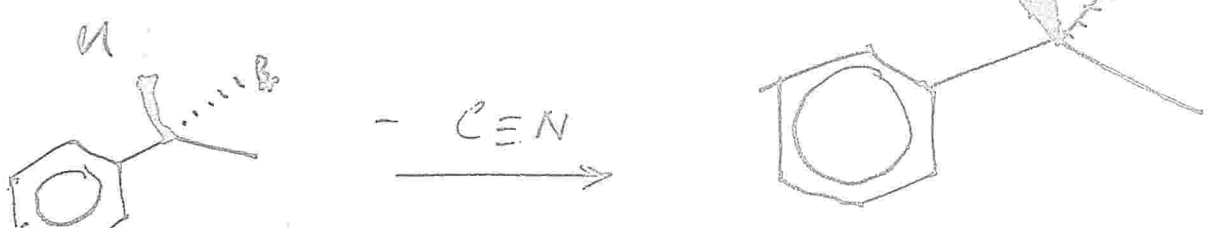
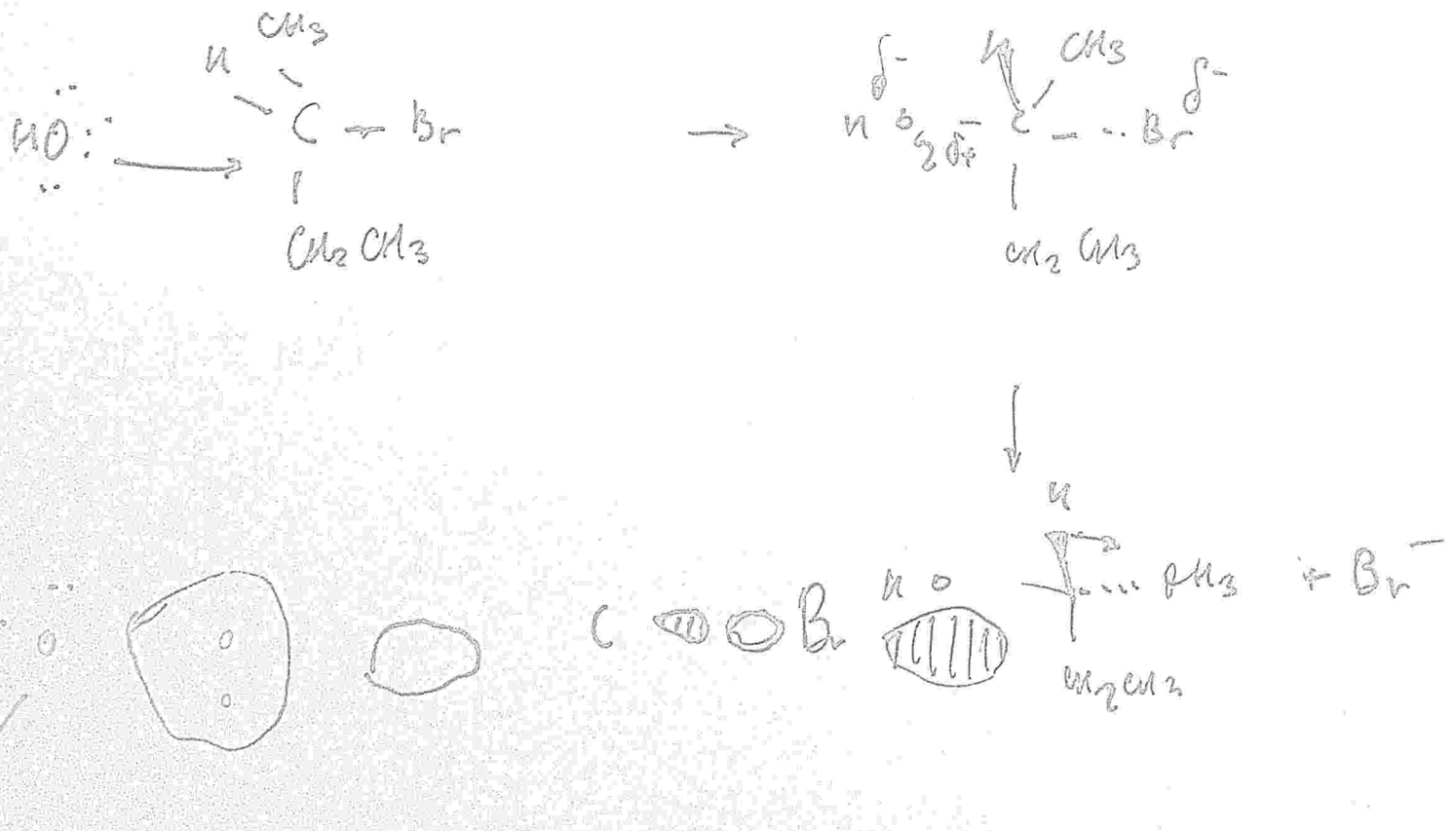
## $S_N2$ Mechanism & Stereochemistry.

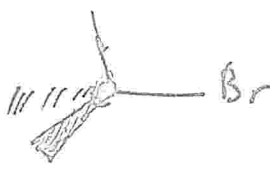


# EFFECTS OF ELECTRONIC STRUCTURE ON THE $S_N2$ REACTION.

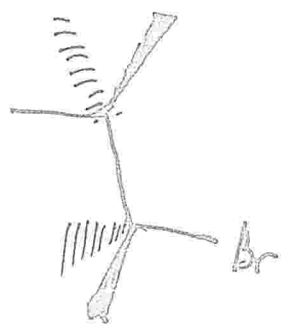

$S_N2$ REACTIVITY →

TERTIARY




< 1

NEOPENTYL




1

1°

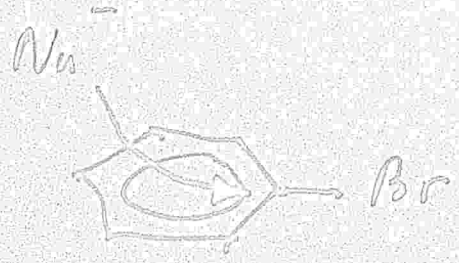

500


40 000


2000 000

· RELATIVE REACTIVITY

NO $S_N2$ on $sp^2$ (WITH EXCEPTIONS)



# NUCLEOPHILIC STRUCTURE AND $S_N2$

① NUCLEOPHILICITY PARALLELS BASICITY IF NUCLEOPHILES ARE THE SAME ATOM BASE COMPARED

② NU-TY ↑ DOWN THE PERIODIC GROUP

③ NEGATIVELY CHARGED SUBSTANCES ARE BETTER NUCLEOPHILES