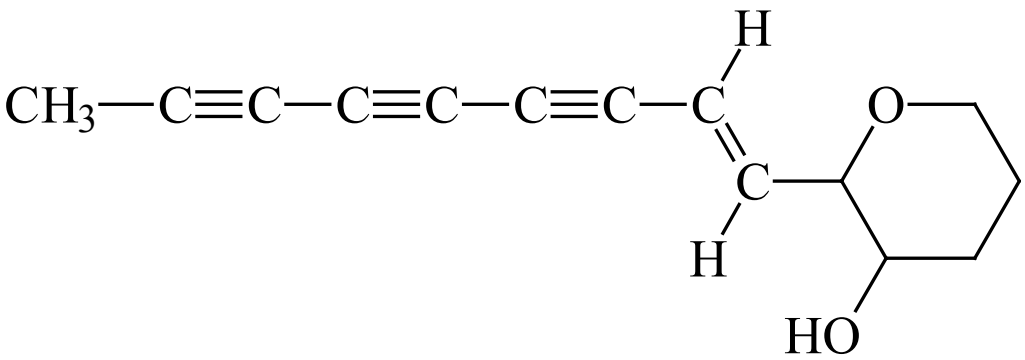
Alchini

I. Nomenclatura e proprietà

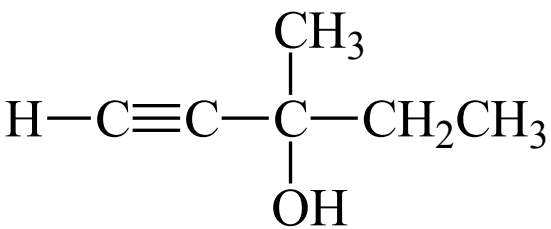
acetilene (H_2/carbone, CaC_2/H_2O)

Non comune in natura:

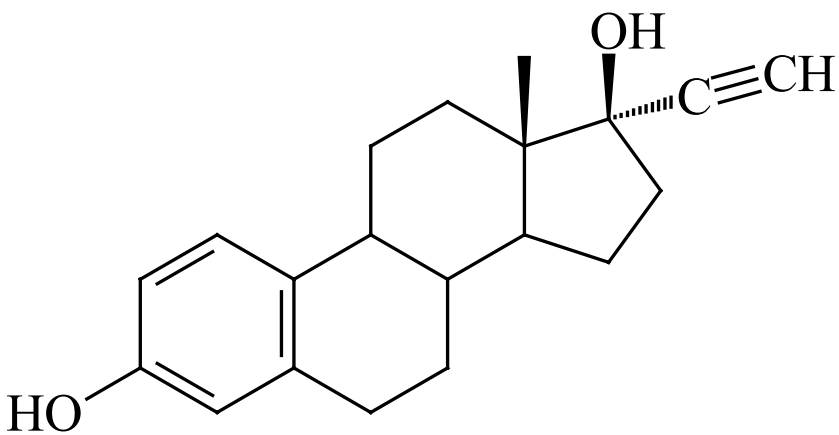


ichtheothereol

Molti farmaci di sintesi:

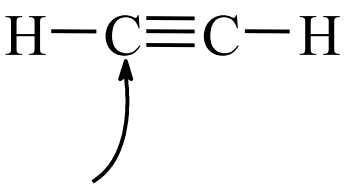


3-metil-1-pentin-3-olo
(ipnotico, sedativo)

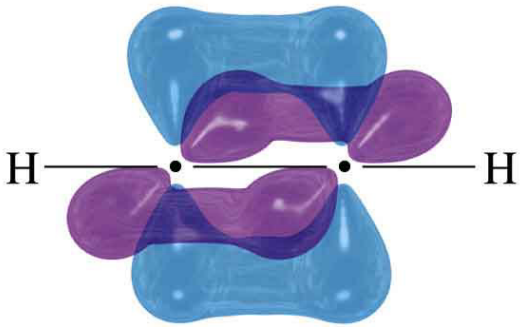


17-etinilestradiolo

A. Struttura



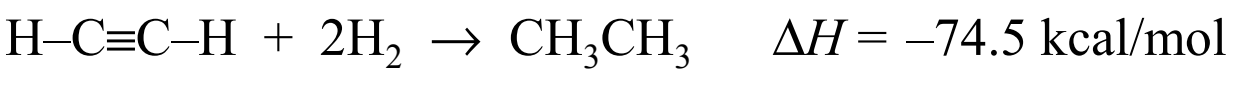
lineare,
sp



1 legame σ
2 legami π

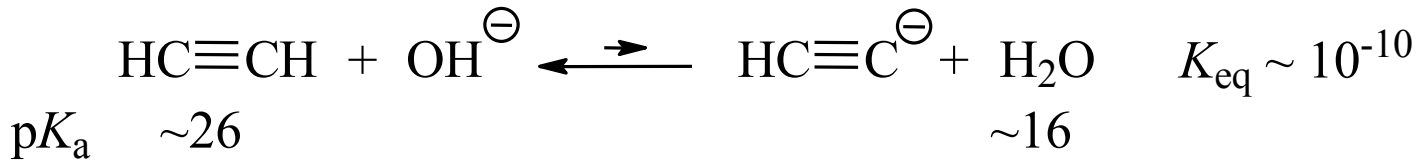
		C–C (pm)	C–H (pm)	*D*(C–C) kcal/mol	*D*(C–H) kcal/mol
CH_3–CH_3	sp^3 (25% *s*)	153	111	88	98
H_2C=CH_2	sp^2 (33% *s*)	134	110	146	108
HC≡CH	*sp* (50% *s*)	120	106	196	128

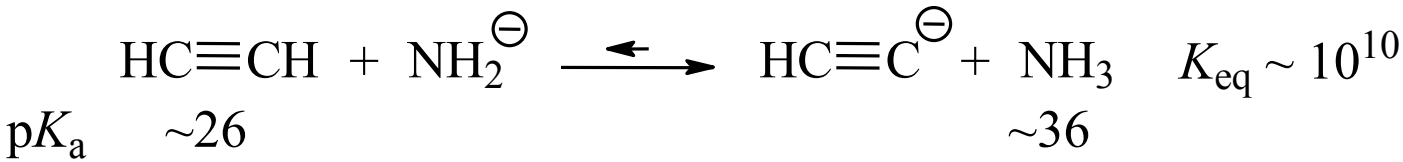
A. Struttura

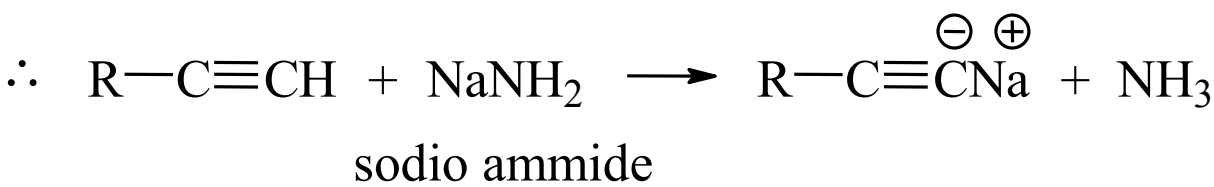


∴ più sostituito = più stabile

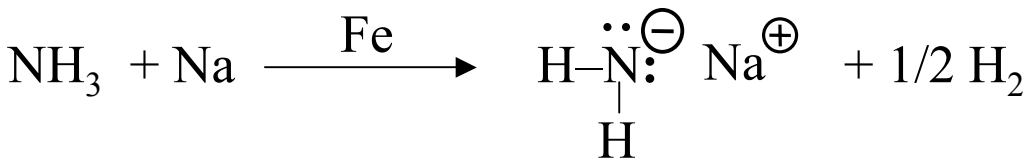
B. Acidità degli alchini terminali



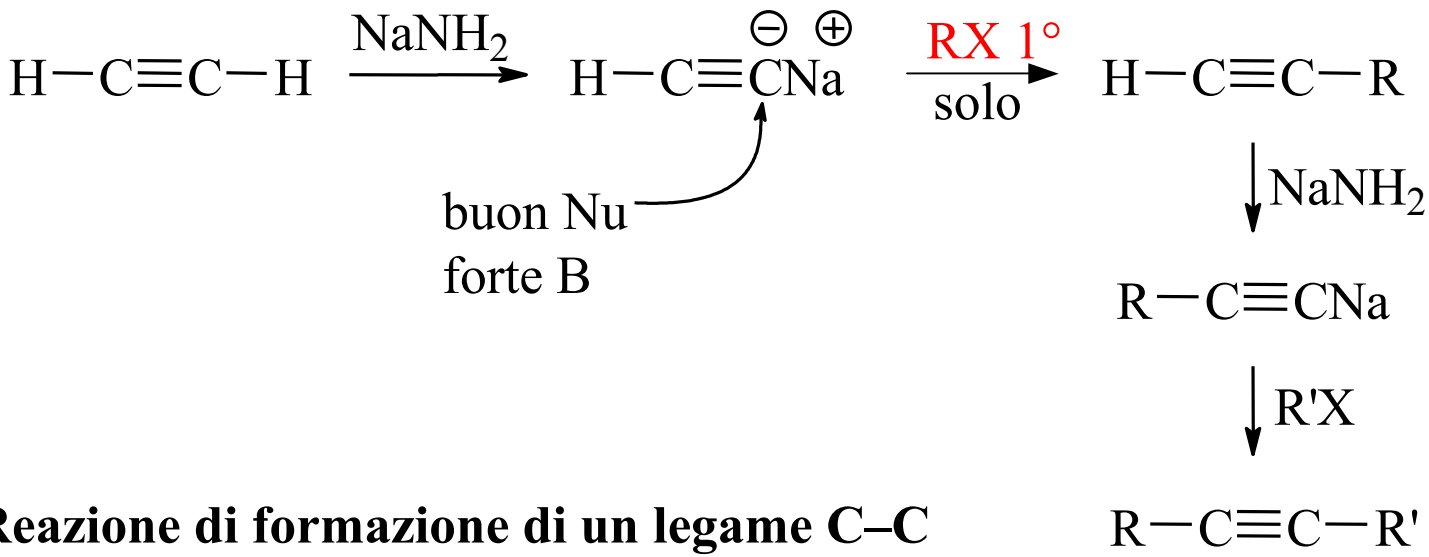




- $NaNH_2$ si ottiene da ammoniaca e sodio metallico.

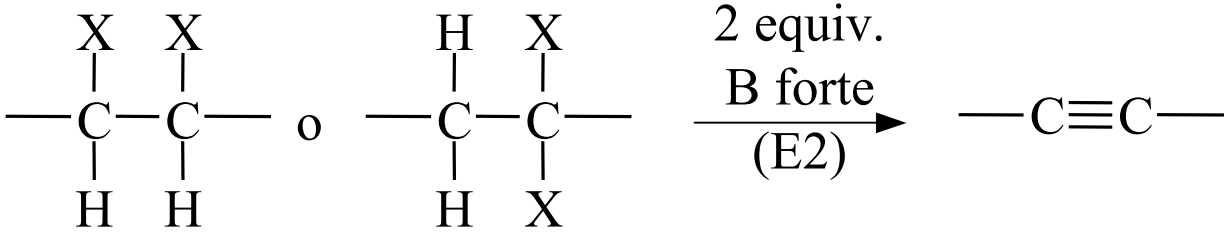


A. Alchilazione di alchini terminali (S_N2)



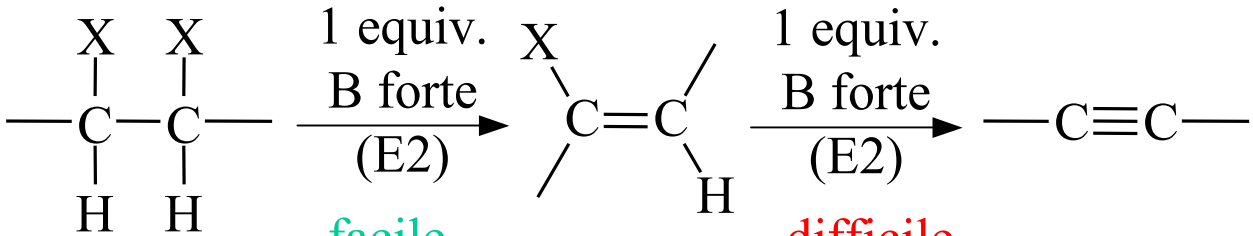
Reazione di formazione di un legame C–C

B. Eliminazione di dialogenuri



dialogenuri vicinali

dialogenuri geminali



facile

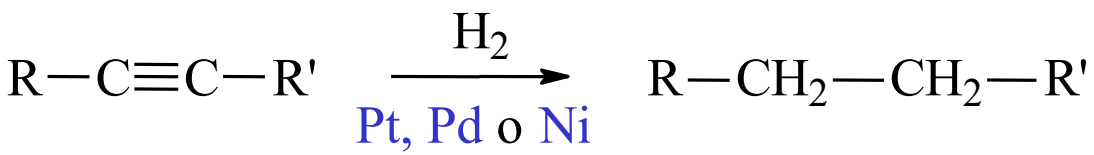
$NaNH_2$
*t*BuOK
KOH

difficile

KOH, 200°C
$NaNH_2$, 150°C

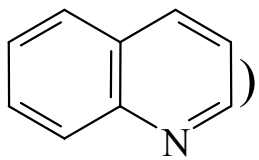
A. Idrogenazione

1. H_2/catalizzatore

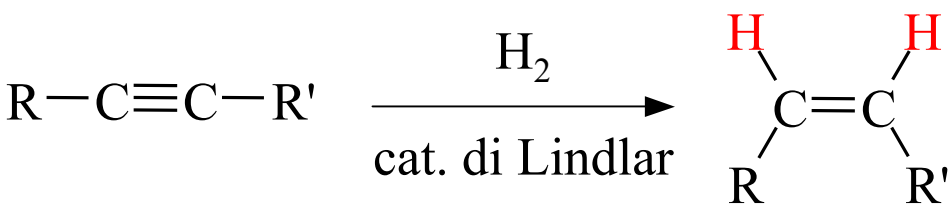


difficile fermare la reazione ad alchene

2. H_2/catalizzatore di Lindlar

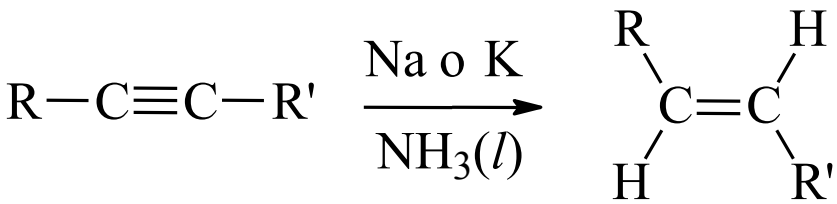
$Pd/CaCO_3$, $Pb(OAc)_2$, chinolina ()

"avvelena" il catalizzatore

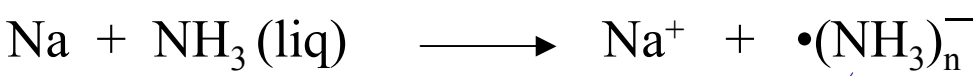


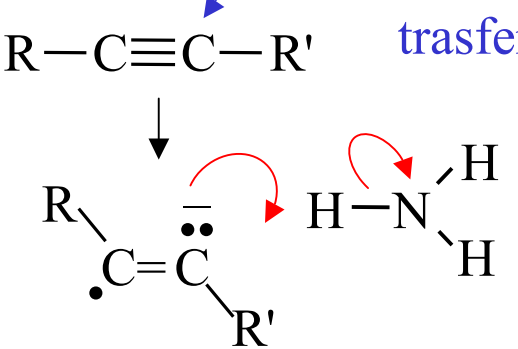
addizione stereoselettiva *sin*

B. Riduzione su metallo-ammoniaca

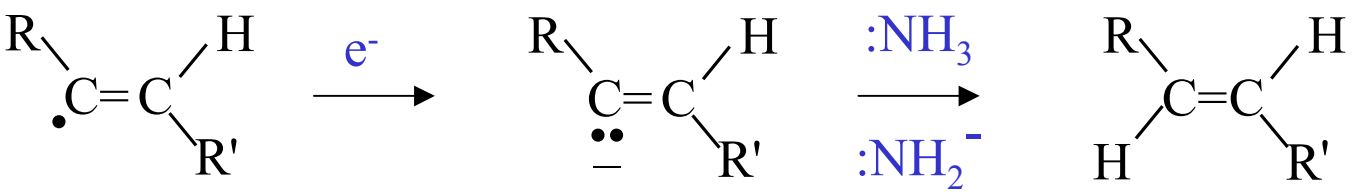


addizione stereoselettiva *anti*

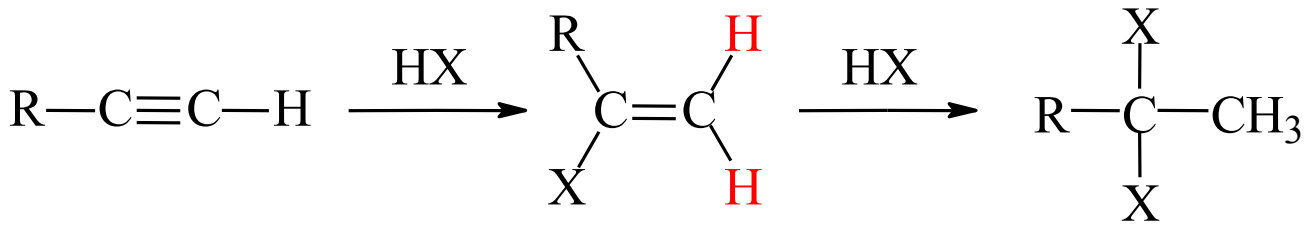




Tutti gli intermedi preferiscono la geometria *trans*

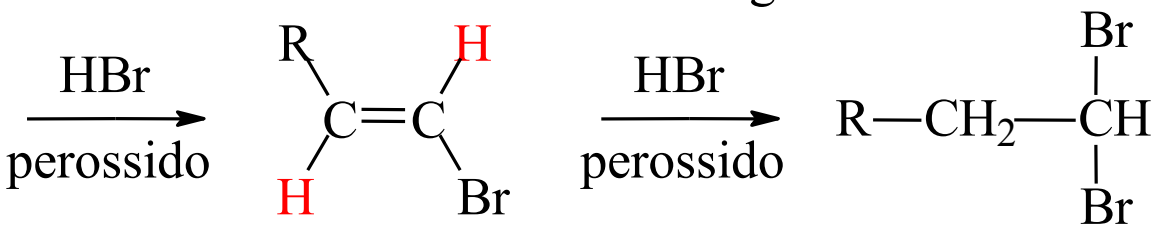


C. Addizione di acidi alogenidrici



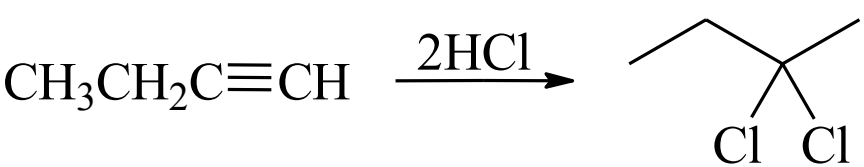
Markovnikov

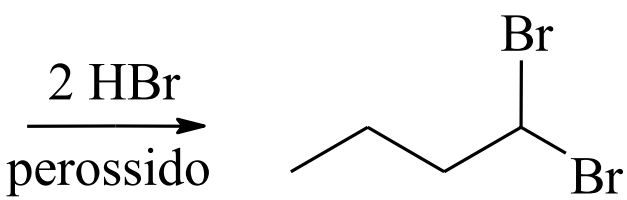
dialogenuro geminale



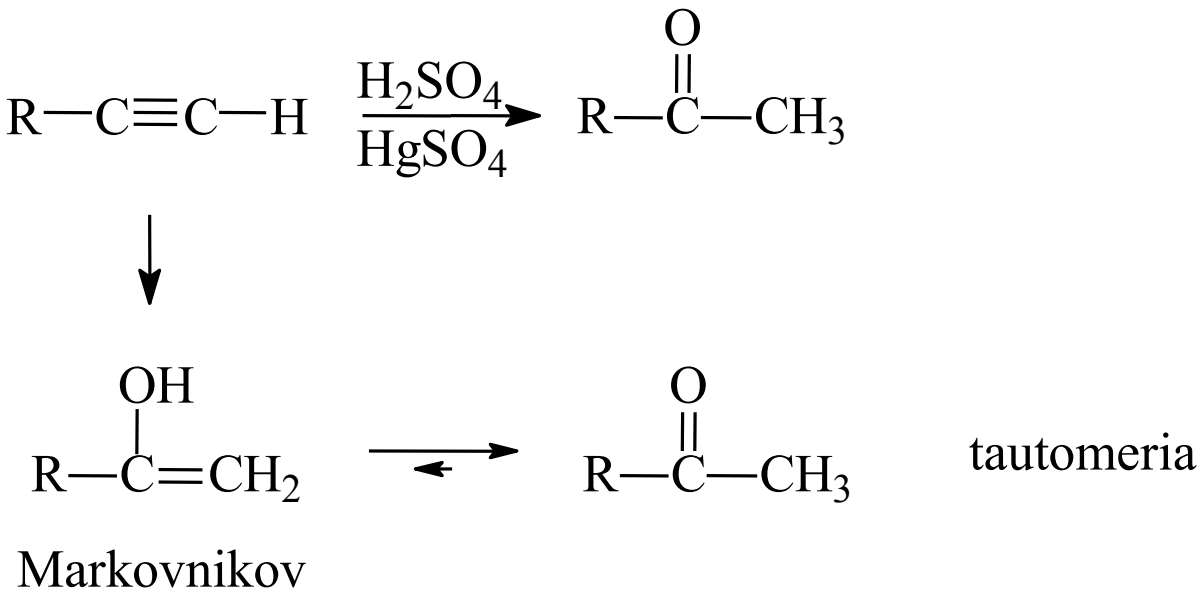
antiMarkovnikov

Es.





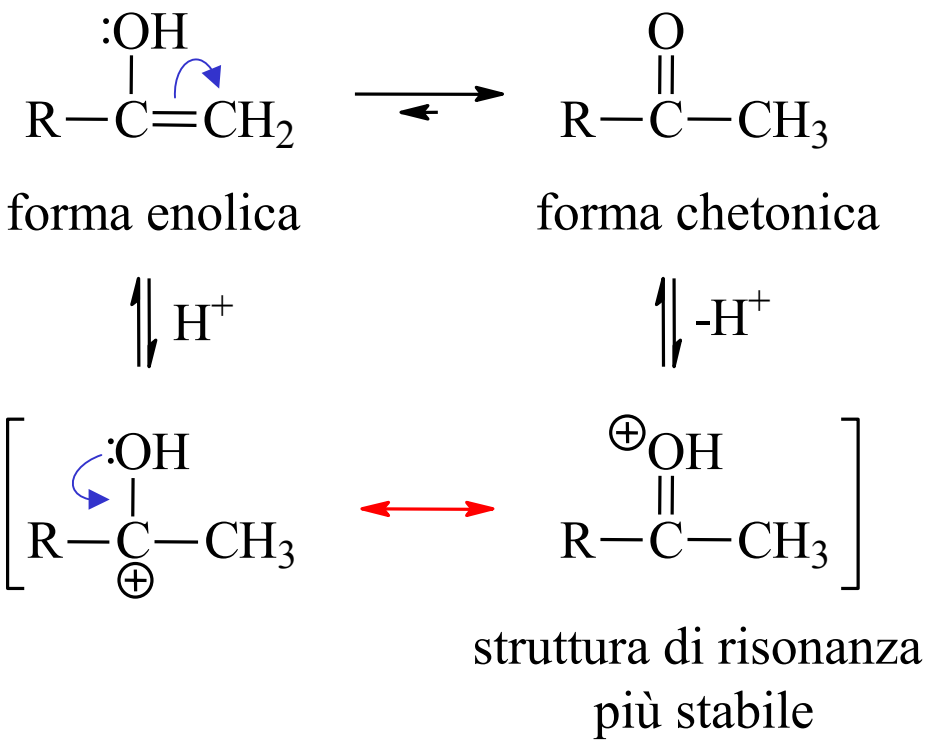
D. Idratazione



tautomeri: isomeri che differiscono per la posizione di un doppio legame e di un idrogeno

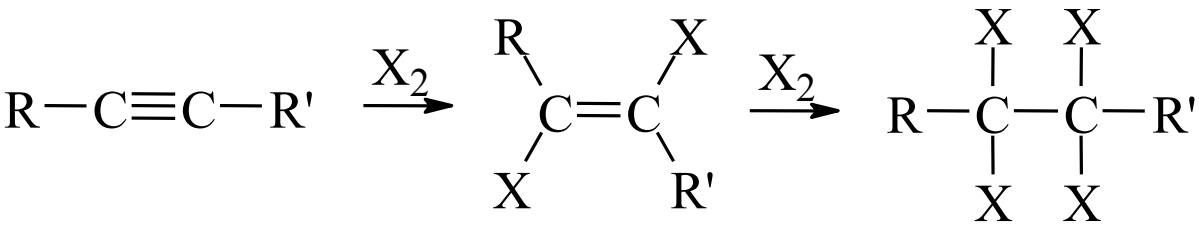
D. Idratazione

tautomeria cheto-enolica



struttura di risonanza
più stabile

E. Addizione di alogeni



addizione *anti*

F. Ozonolisi