Alkeny a cykloalkeny

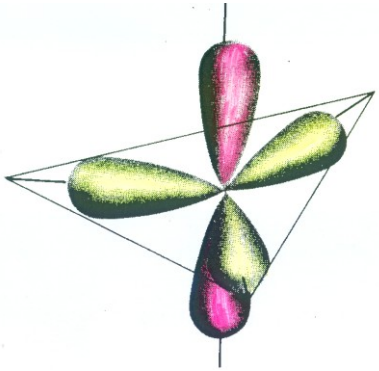
Alkeny a cykloalkeny

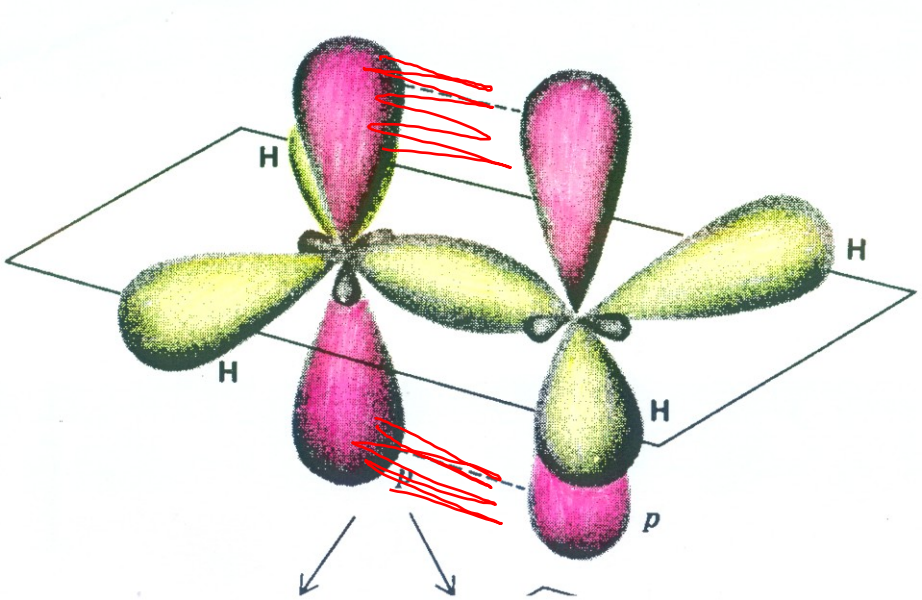
Sloučeniny s vazbami **C - C** 0,154 nm a vazby **C – H**

C = C 0, 134 nm a vazby **=C-H**

Energie vazeb **C – C** 351 kJ/mol σ - vazba

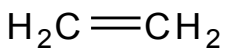
C = C 610 kJ/mol **Δ = 259 kJ/mol** π - vazba





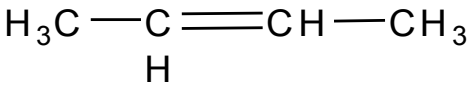
Alkeny a cykloalkeny

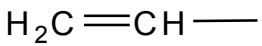
Názvosloví alkenů

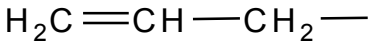

ethen, ethylen

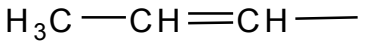

propen, propylen

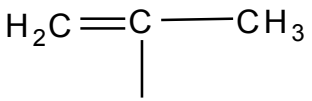

buten


but-2-en

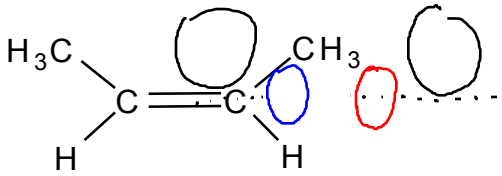

ethenyl- , **vinyl-**


prop-2-en-1-yl, **allyl-**


prop-1-en-1-yl

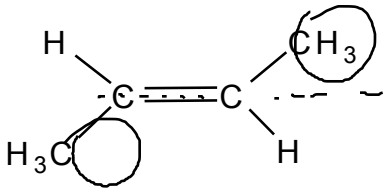

prop-1-en-2-yl

Geometrická isomerie



cis-but-2-en

(Z)-but-2-en

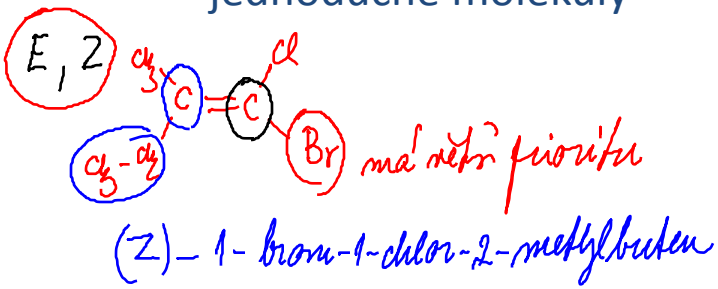


trans-but-2-en

(E)-but-2-en

(E) (Z)

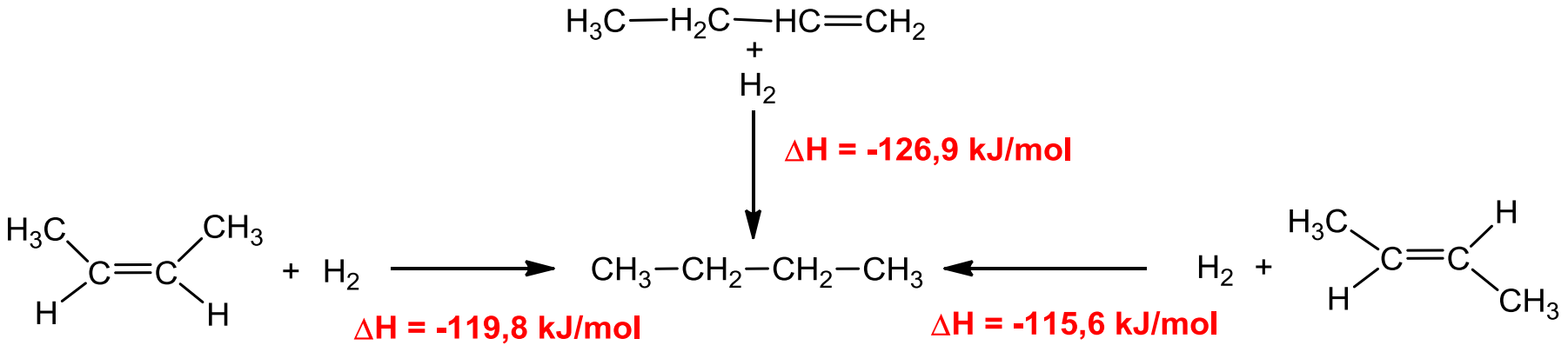
používání afixů ***cis-*** **a** ***trans-*** vhodné pro jednoduché molekuly



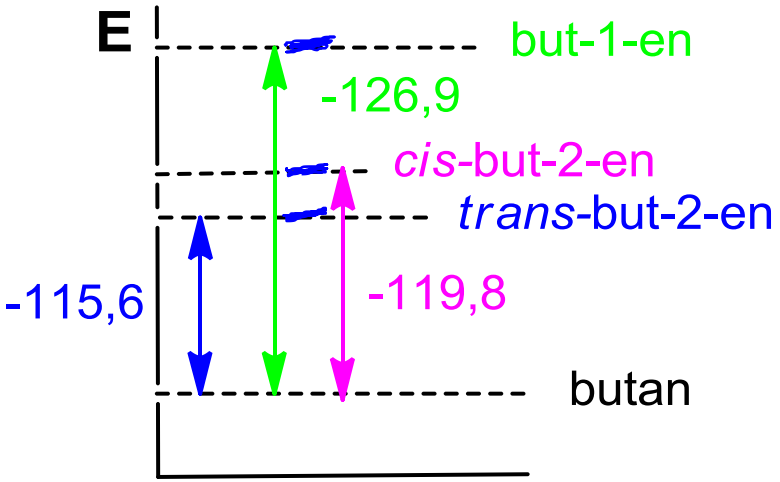
(Z)-1-brom-1-chlor-2-methylbuten

Alkeny a cykloalkeny

STABILITA alkenů



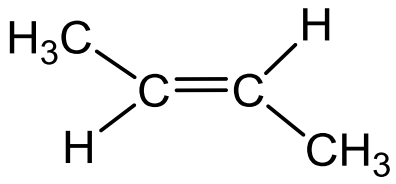
cis- ***trans-***



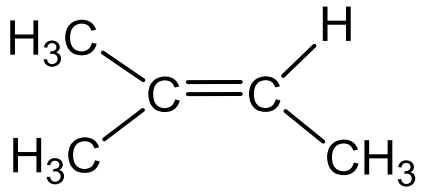
hydrogenační teplo

stabilita *trans*-isomeru je větší

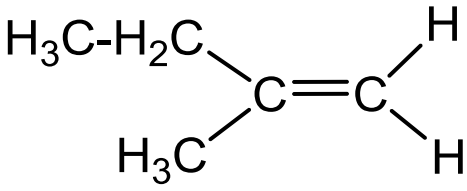
Alkeny a cykloalkeny



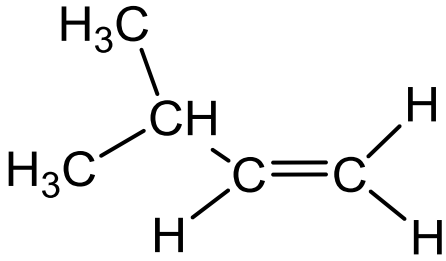
ΔH = -115,6 kJ/mol



ΔH = -112,7 kJ/mol



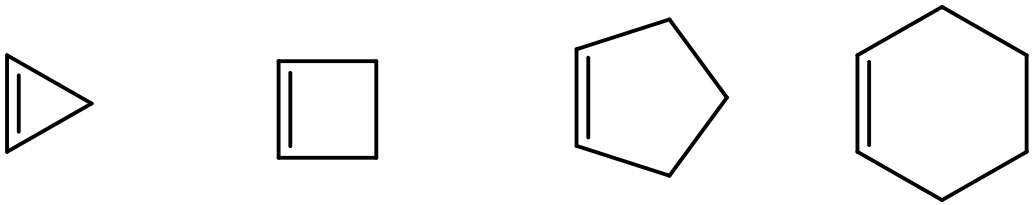
ΔH = -119,4 kJ/mol



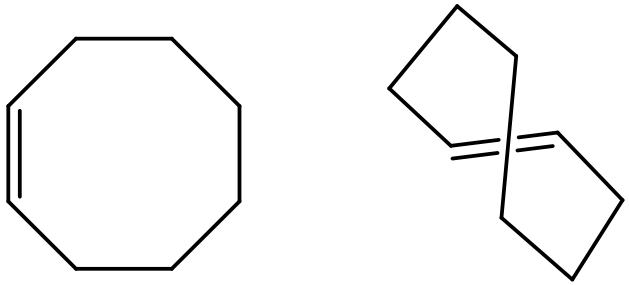
ΔH = -126,9 kJ/mol

čím víc je systém rozvětvený na násobné vazbě, tím je stabilnější

Alkeny a cykloalkeny



všechny cykloalkeny do 6 atomů v kruhu jsou známy jako *cis*- isomery



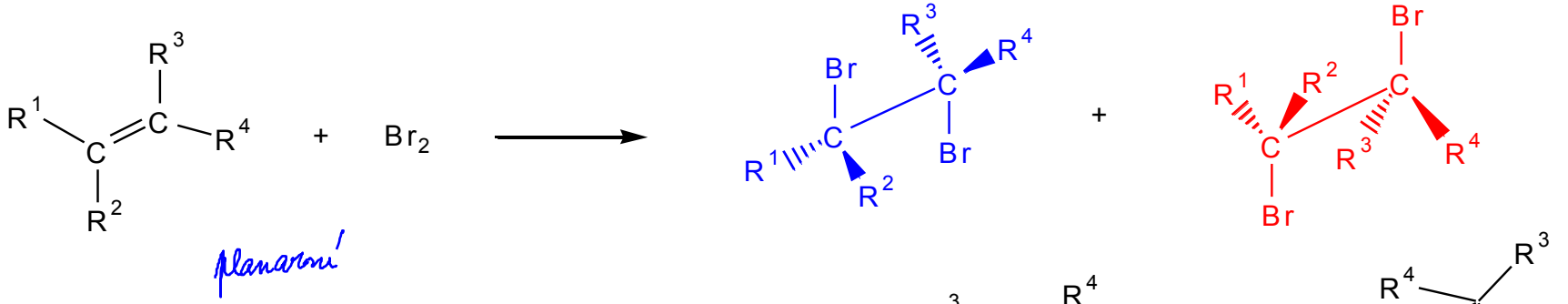
stálý a isolovatelný je až *trans*-cyklookten

Alkeny a cykloalkeny

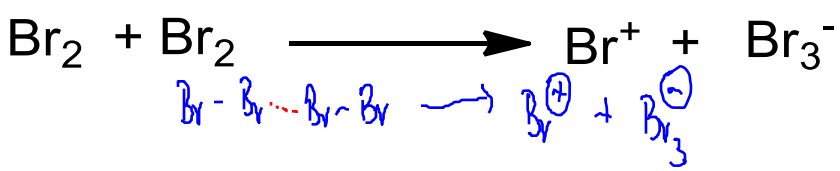
HLAVNÍ SMĚR REAKTIVITY ALKENŮ

ADIČNÍ REAKCE

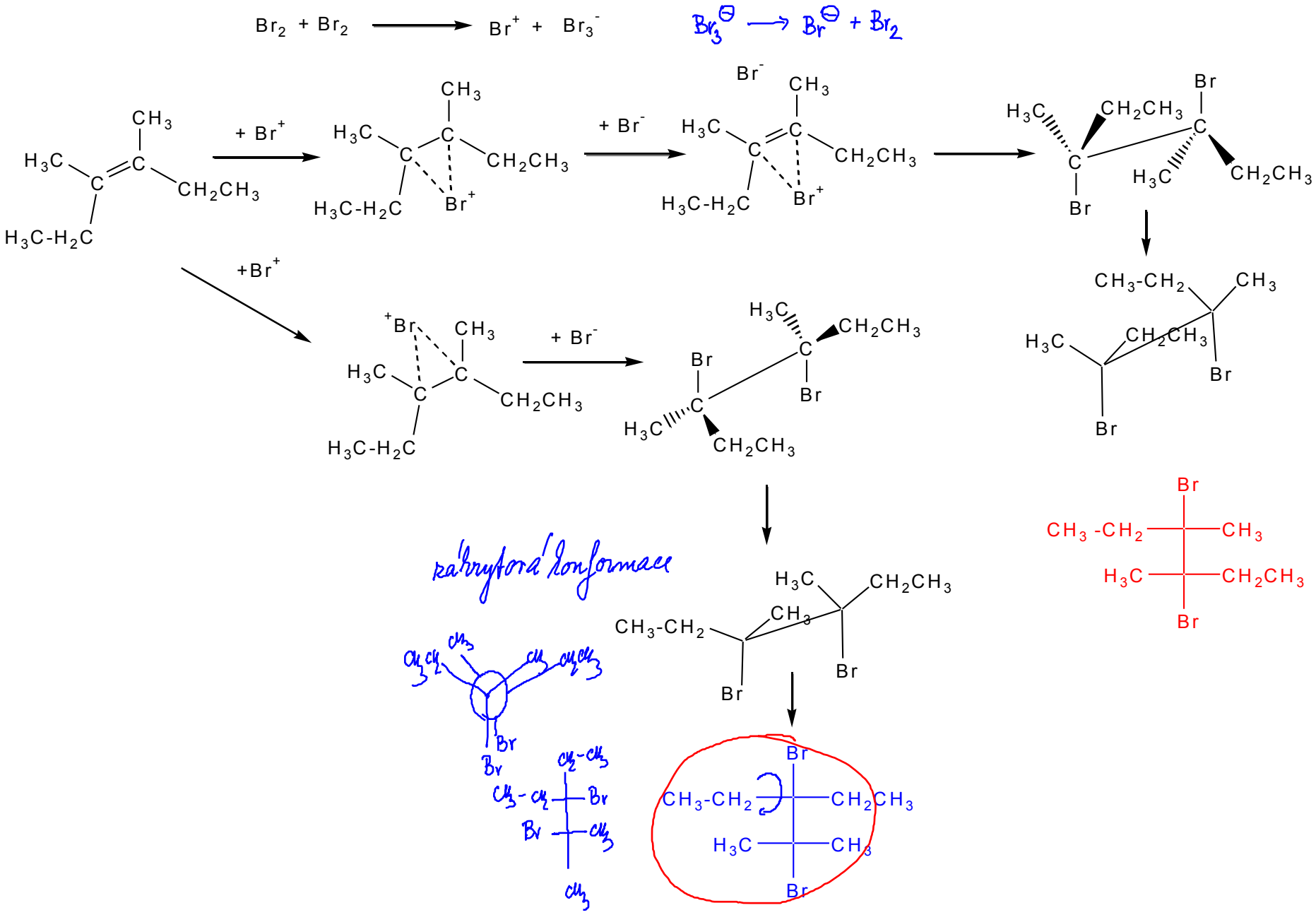
Reakce probíhají stereospecificky



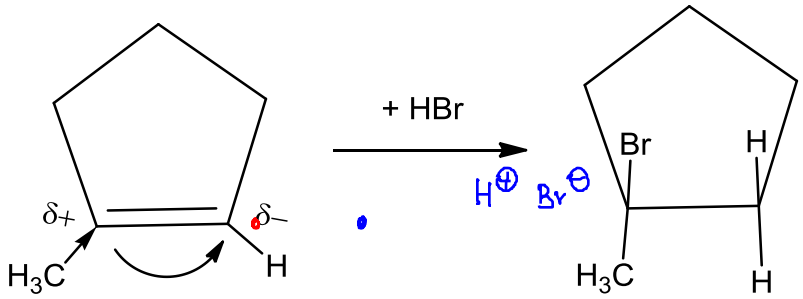
Při adici symetrické molekuly na nesymetricky substituovaný olefin vznikají enantiomery – reakce je stereospecifická *trans- (anti-)*



Stereospecifický průběh adičních reakcí

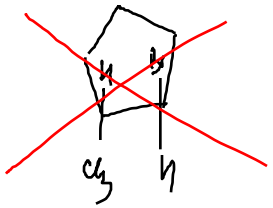


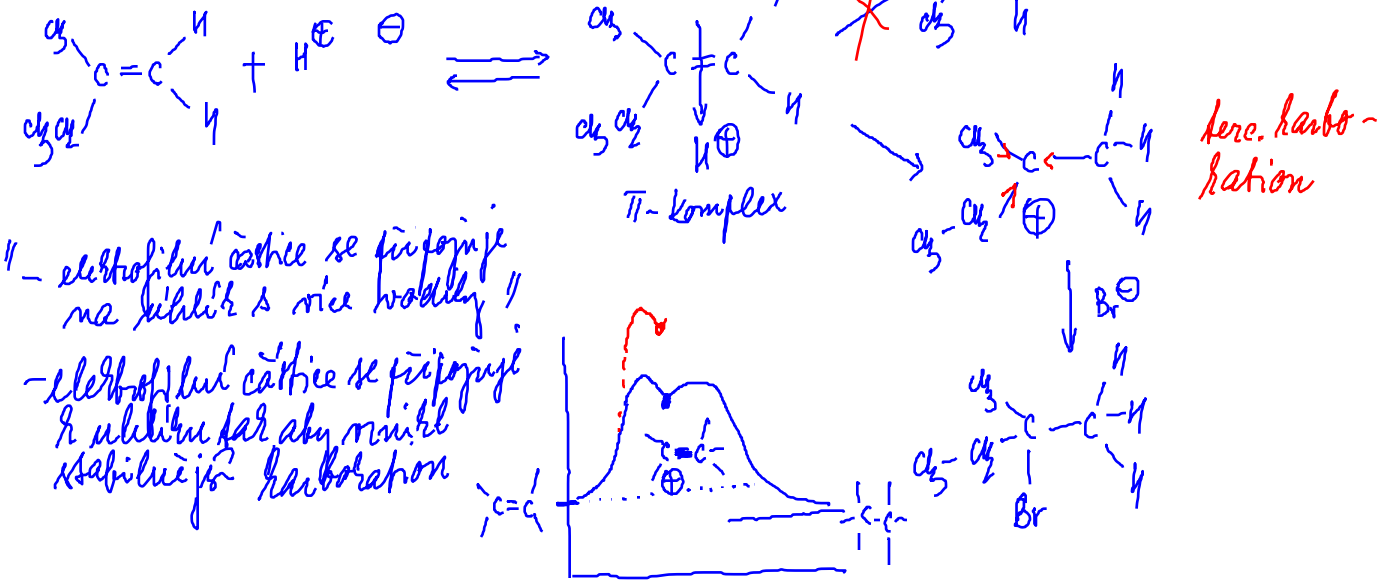
Regiospecifický průběh adičních reakcí



nesymetrický alken
nesym. uhl. molekula, které se adduje

Markovnikovo pravidlo

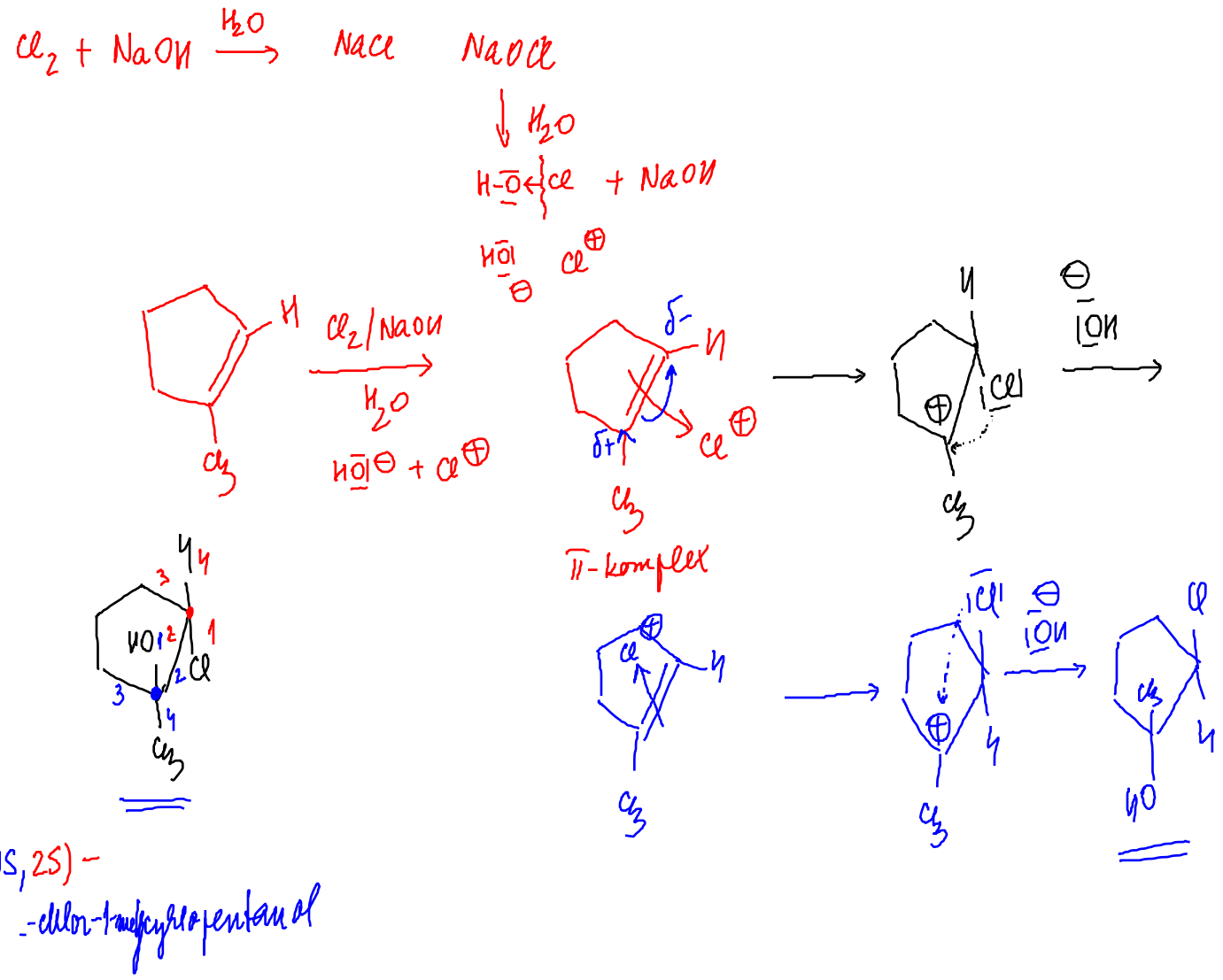




" – elektrofilní částice se připojuje na uhlík s více vodíky "

– elektrofilní částice se připojuje k uhlíku tak aby vznikl stabilnější karbokation

Regiospecifický průběh adičních reakcí



Regiospecifický průběh adičních reakcí