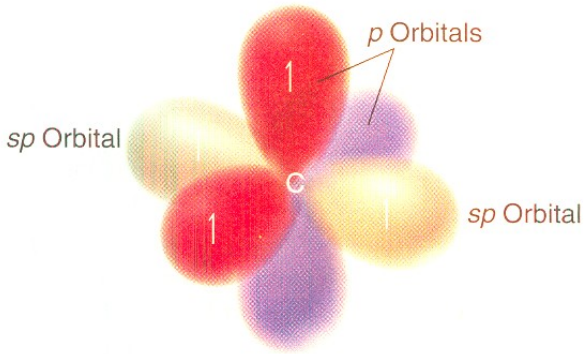
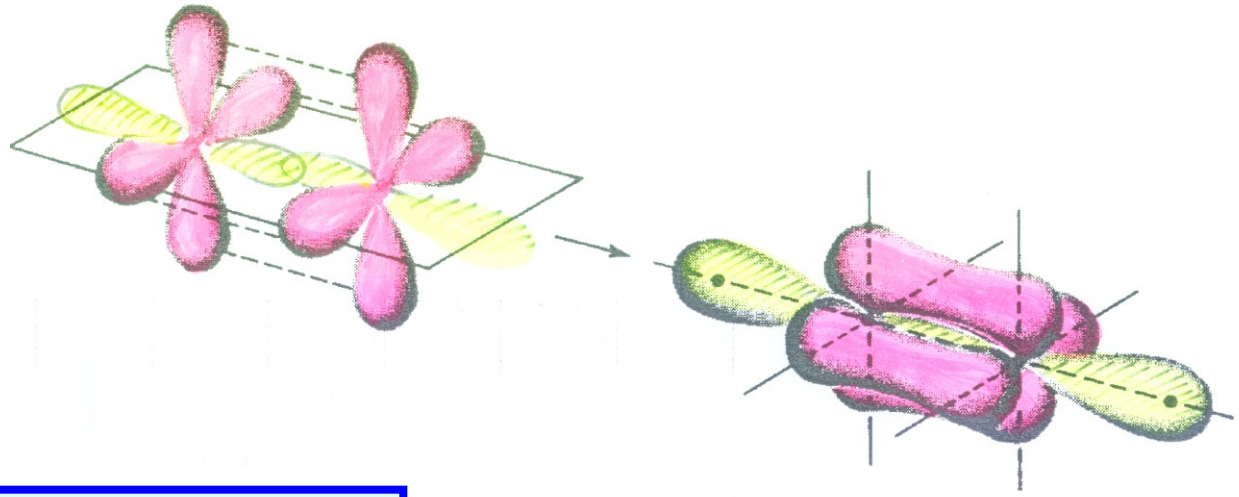
ALKYNY



C - C 0,154 nm

C = C 0,134 nm

C≡C 0,120 nm



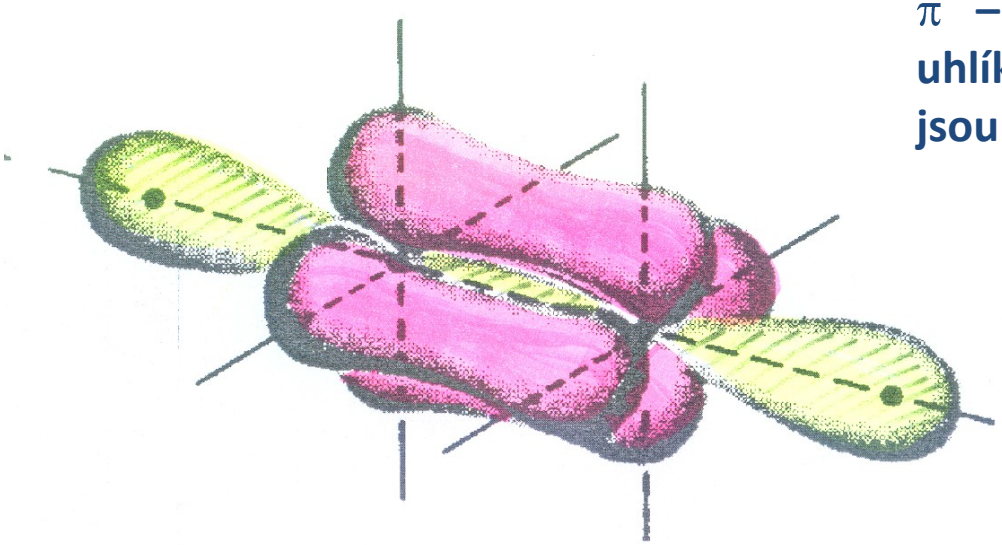
TVORBA TROJNÉ VAZBY

ALKYNY

C - C 0,154 nm

C = C 0,134 nm

C ≡ C 0,120 nm



π – elektronováný oblak koncentrovaný mezi uhlíkové atomy, vodíkové atomy na uhlíku Csp jsou vodíky kyselé

	pK_a
CH_3 - H	50
= C - H	44
≡ C - H	25
H_2O	15,7
CH_3OH	16
NH_3	35

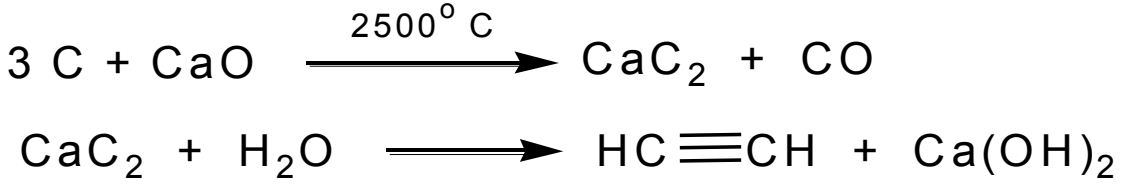
Při reakci s bází vytváří soli – acetylidy

acetylidy alkalické

acetylidy těžkých kovů jsou v suchém stavu třaskavé

ALKYNY

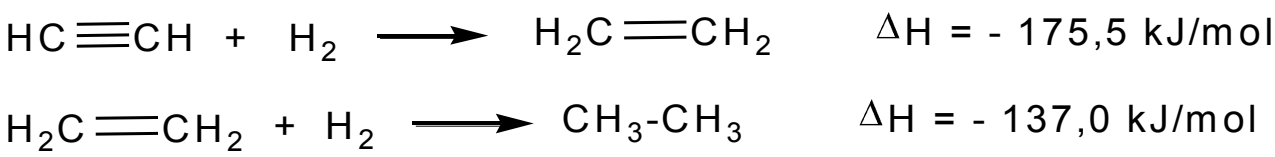
PŘÍPRAVA ACETYLENU



Acetylen v proudu kyslíku velmi dobře hoří s vysokou teplotou plamene (2800° C) – sváření

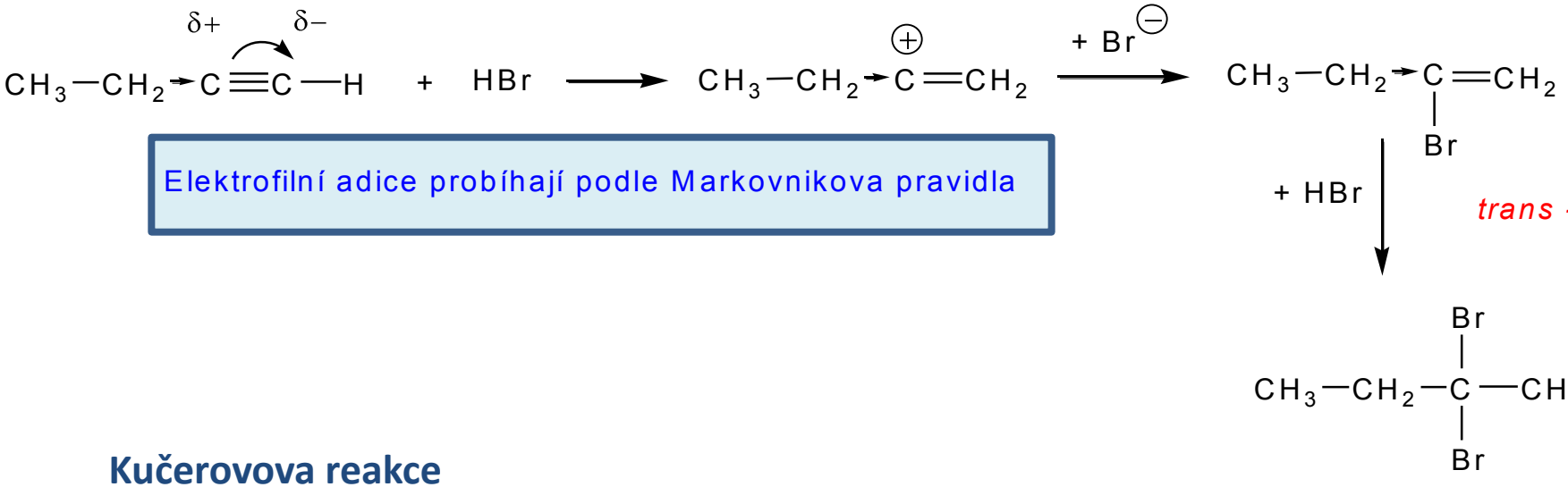
V ocelových láhvích se dopravuje rozpuštěný v acetonu s infusoriovou hlinkou (zeolity)

REAKTIVITA - podobná alkenům, tedy adiční reakce



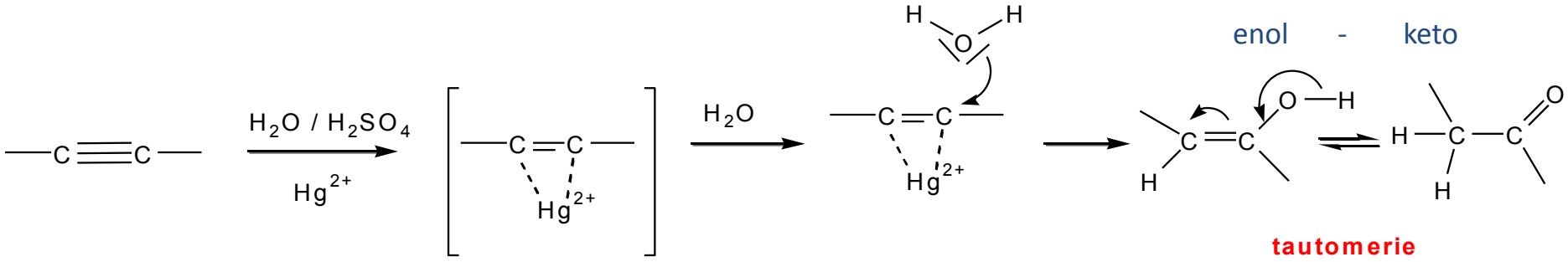
Běžně se meziprodukt s dvojnou vazbou nezachytí (kat. Pd, Pt, Ni), je třeba použitý katalyzátor otrávit např. Pd + $BaSO_4$ + chinolin (Lindlarův katalyzátor)

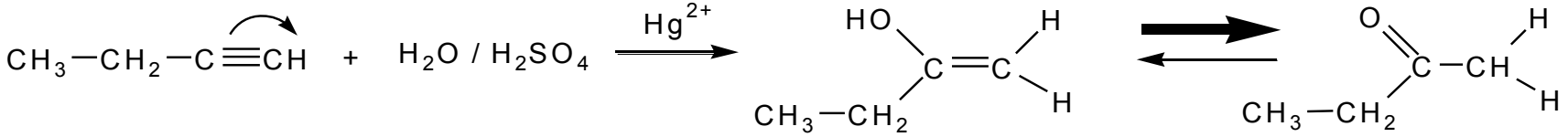
ALKYNY



Elektrofilní adice probíhají podle Markovnikova pravidla

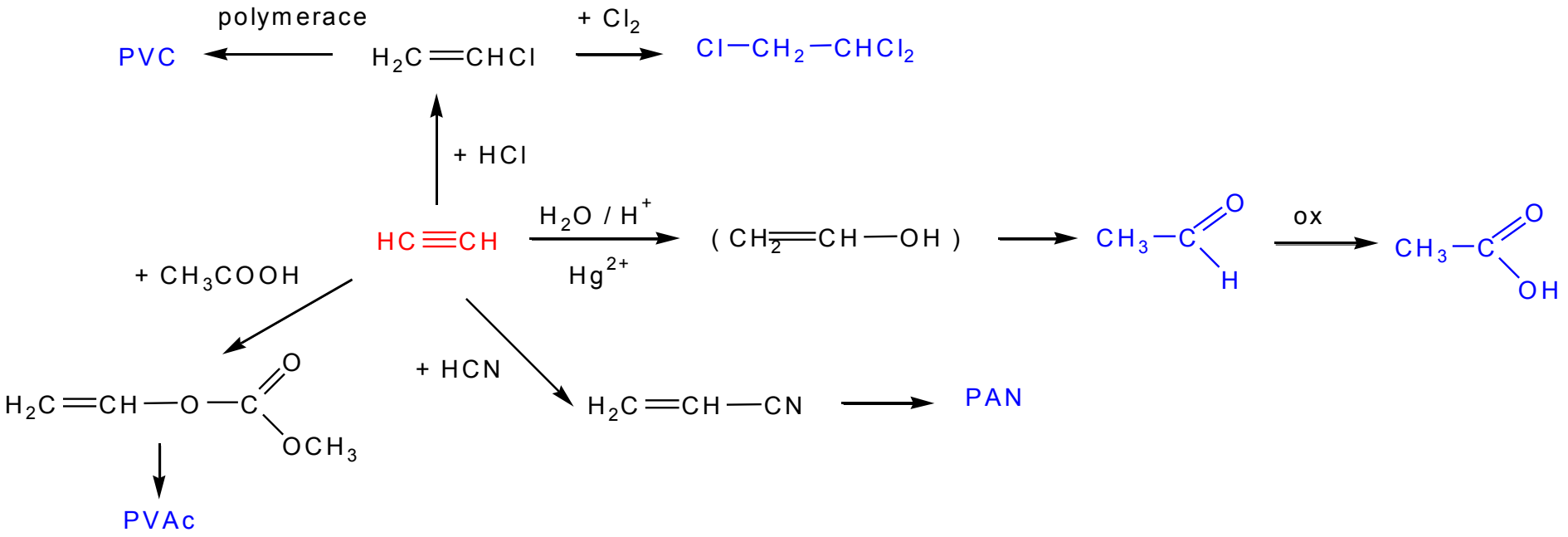
Kučerovova reakce



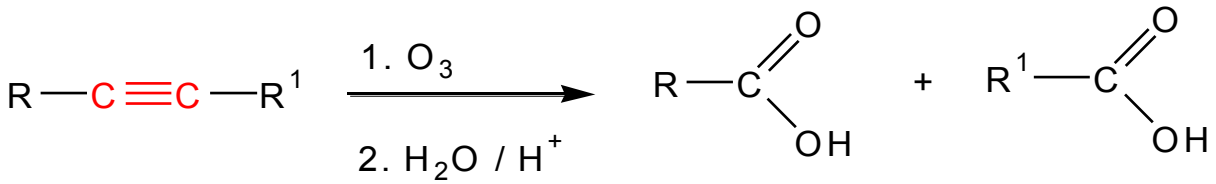


ALKYNY

PŘEMĚNY ACETYLENU



Ozonolýza



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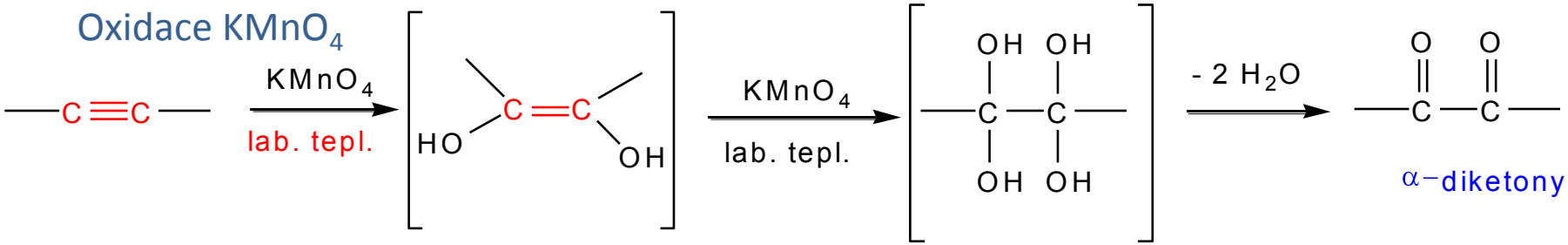
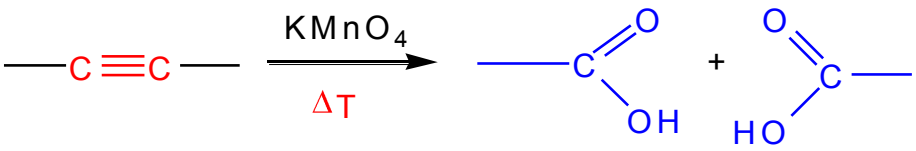
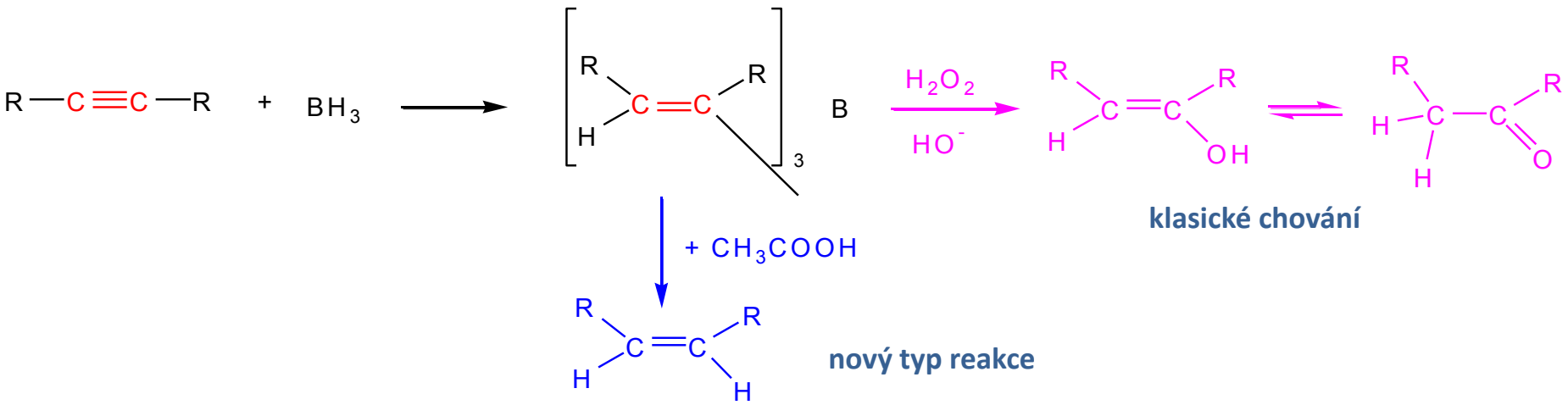
PŘEMĚNY ACETYLENU

Oxidace $KMnO_4$





Hydroborace



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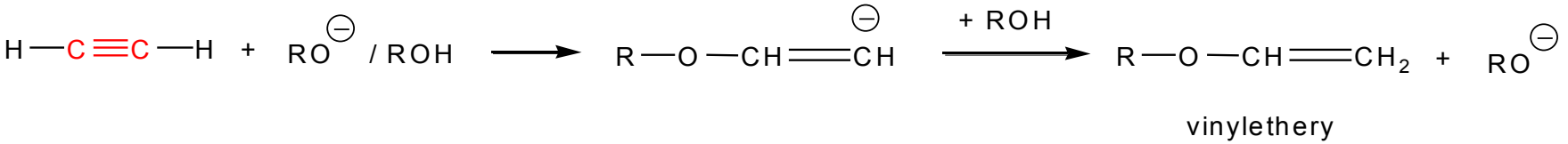
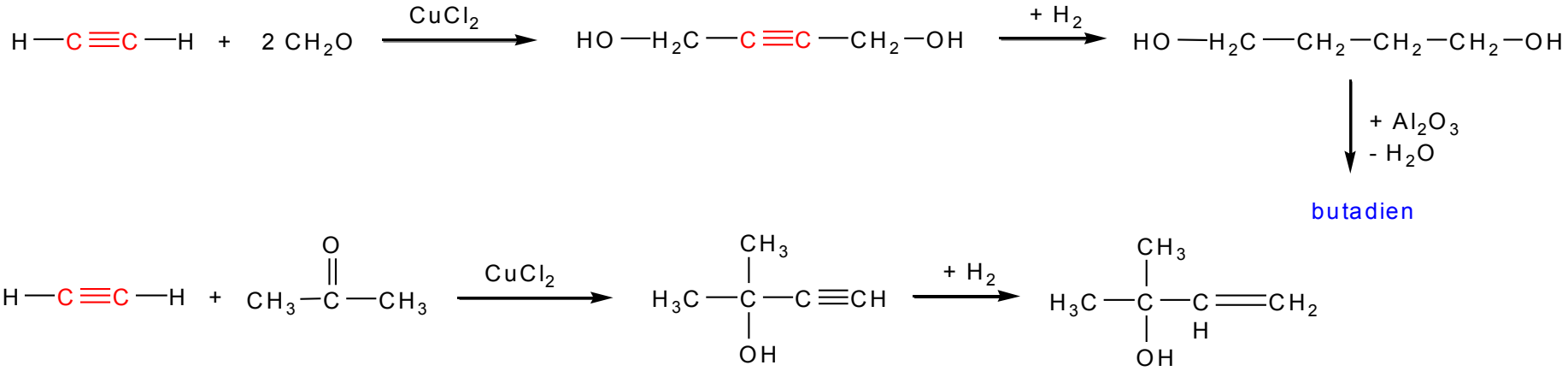
Nukleofilní adice - nový typ chování nenasycené sloučeniny

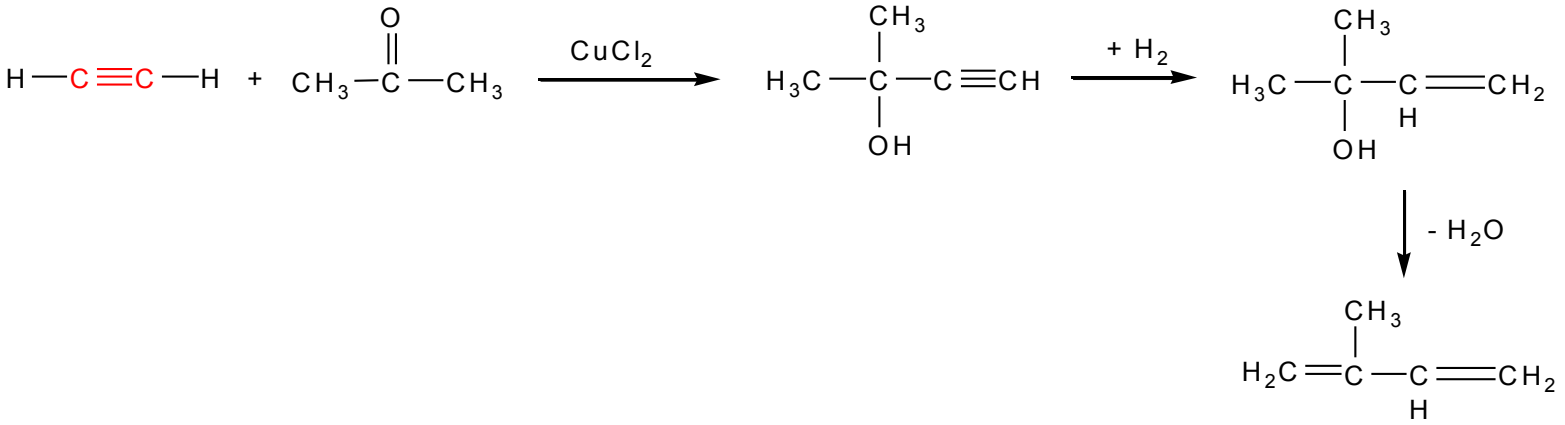


vinylethery

REPPEho syntézy



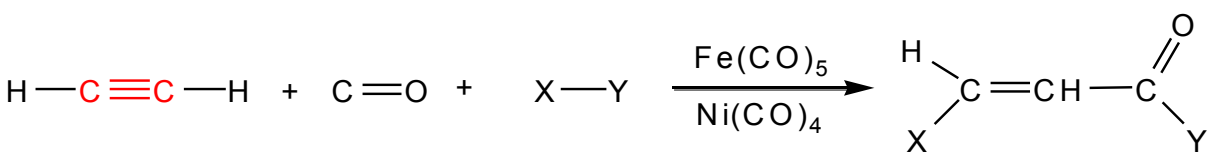
butadien



2-methylbuta-1,3-dien
isopren

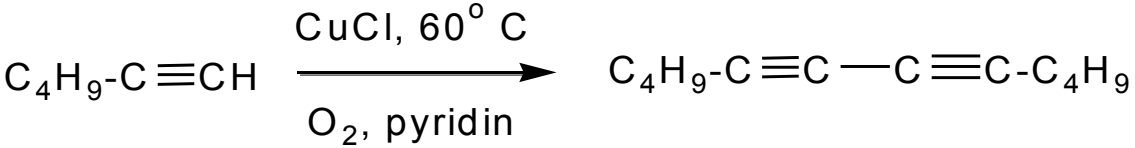
ALKYNY

Karbonylace acetylenu



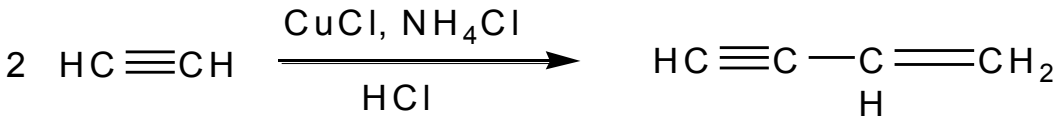
X—Y	
H_2O	kys. akrylová
ROH	estery kys. akrylové
HCl	chlorid kys. akrylové
H-H	akrolein

Oxidativní spojování (Eglintonova reakce)



Reakce významná pro prodloužení řetězce s vysokým výtěžkem

Nieuwlandova reakce - dimerizace

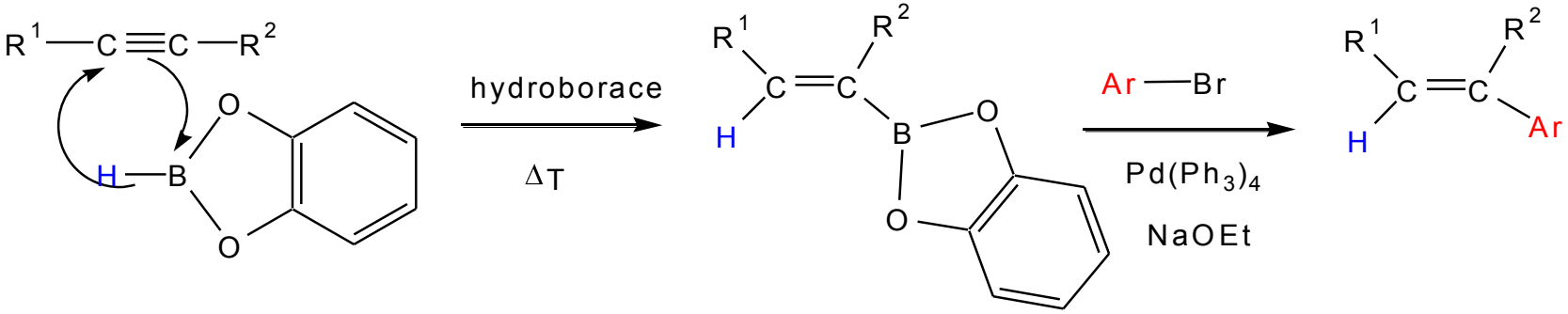


„Adice acetylenu na acetylen“ – příprava vinylacetylenu

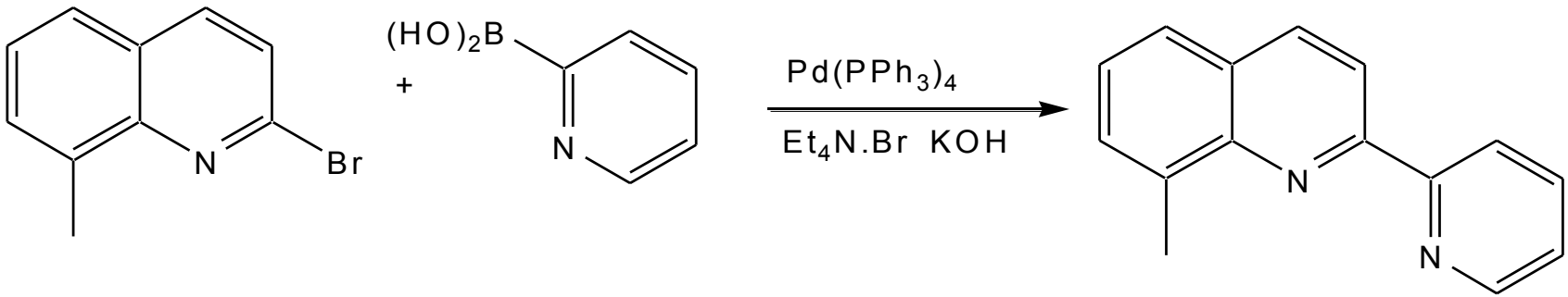
ALKYNY

Suzuki coupling

reakce založena na interakci alkynu s kyselinou boronovou za katalýzy palladia

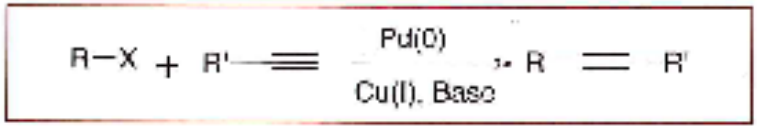


Reakce rozšířena i do oblasti aromatické chemie, kdy dochází k tvorbě vazeb mezi dvěma aromatickými, tedy i heterocyklickými sloučeninami



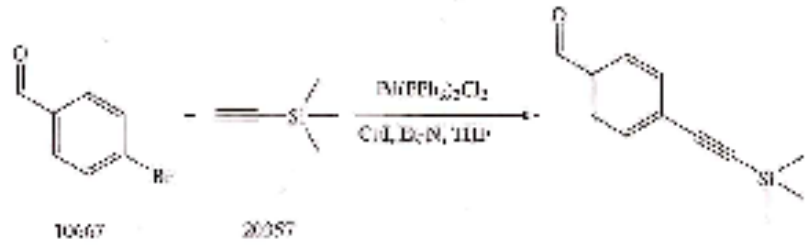
ALKYNY

6) The Sonogashira coupling

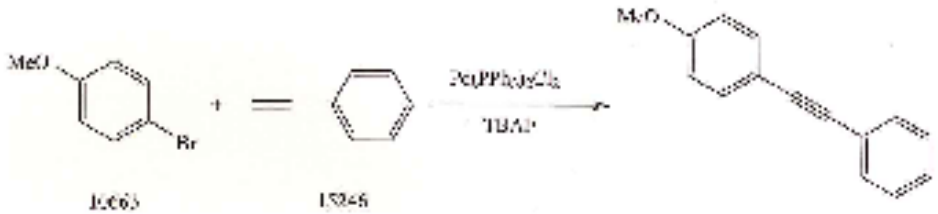


The Sonogashira reaction offers an extremely useful route into aryl- and alkenyl-alkynes. The alkyne moiety is usually introduced via its copper salt. This is generated *in situ* from a Cu(I) salt, such as CuI or CuCN, and a terminal alkyne in the presence of an amine base.[7]

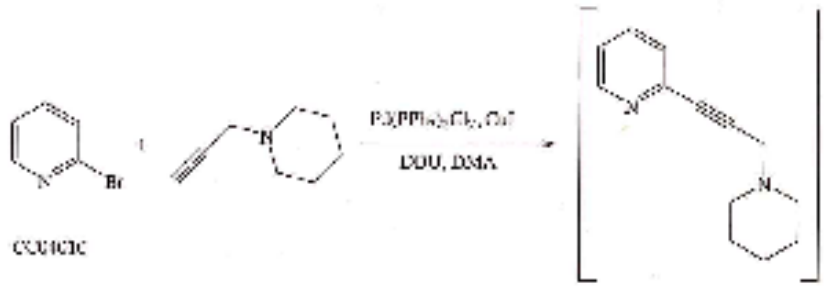
In this case, the TMS protecting group can be removed following the reaction to give the terminal alkyne product. This can be further functionalised, possibly *via* a second Sonogashira coupling.



Recent improvements in this reaction have led to the development of copper and amine free couplings.[8]



Other uses for this reaction involve the synthesis of intermediates that continue to react under the conditions to give more interesting products.[9]



Sonogashira coupling

reakce založena na interakci alkynu s alkylhalogenidem za katalýzy palladia