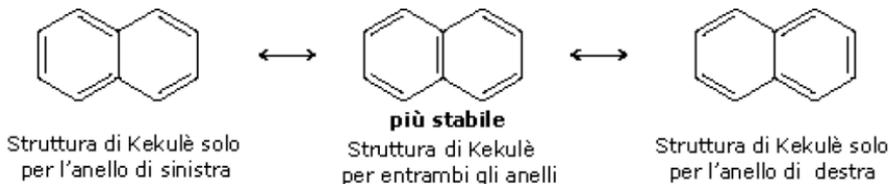


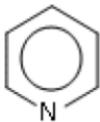
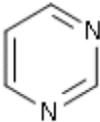
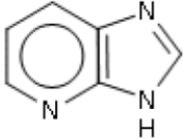
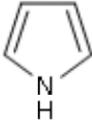
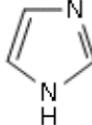
Aromaticità e benzene

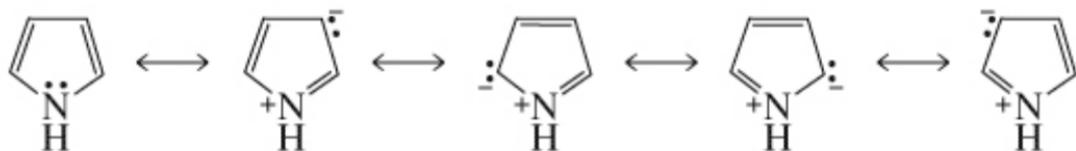
Risonanza del naftalene



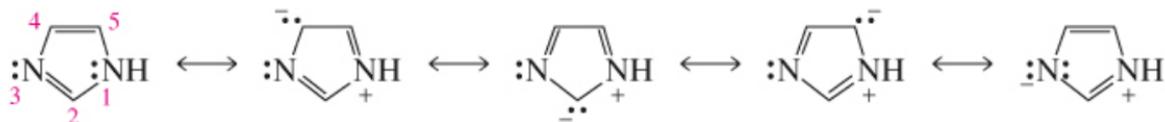
Assegnare il nome ai seguenti composti eterociclici aromatici

Gli areni si definiscono **eterociclici** quando uno o più atomi di carbonio di un anello aromatico sono sostituiti da altri elementi chimici (**eteroatomi**) senza che venga persa l'aromaticità, i più importanti eterociclici aromatici, da un punto di vista biochimico sono:

						
Piridina	Pirimidina	Purina	Pirrolo	Tiofene	Furano	Imidazolo



strutture limite di risonanza del pirrolo

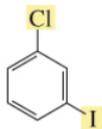


strutture limite di risonanza dell'imidazolo



Bruice
Chimica Organica, II Ed.
EdiSES

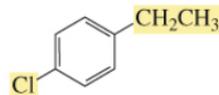
nomenclatura



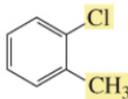
1-cloro-3-iodobenzene
meta-cloroiodobenzene
non
1-iodo-3-clorobenzene o
meta-iodoclorobenzene



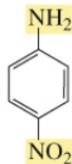
1-bromo-3-nitrobenzene
meta-bromonitrobenzene



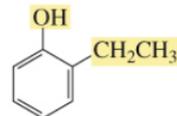
1-cloro-4-etilbenzene
para-cloroetilbenzene



2-clorotoluene
orto-clorotoluene
non
orto-clorometilbenzene

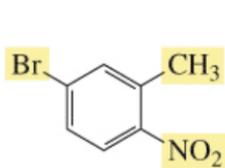


4-nitroanilina
para-nitroanilina
non
para-amminonitrobenzene

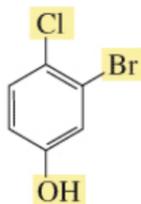


2-etilfenolo
orto-etilfenolo
non
orto-etilidrossibenzene

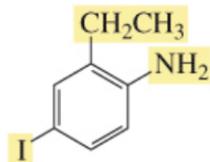
nomenclatura



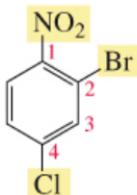
5-bromo-2-nitrotoluene



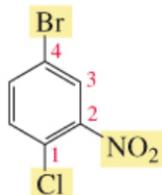
3-bromo-4-clorofenolo



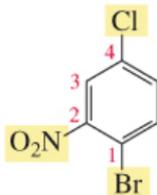
2-etil-4-iodoanilina



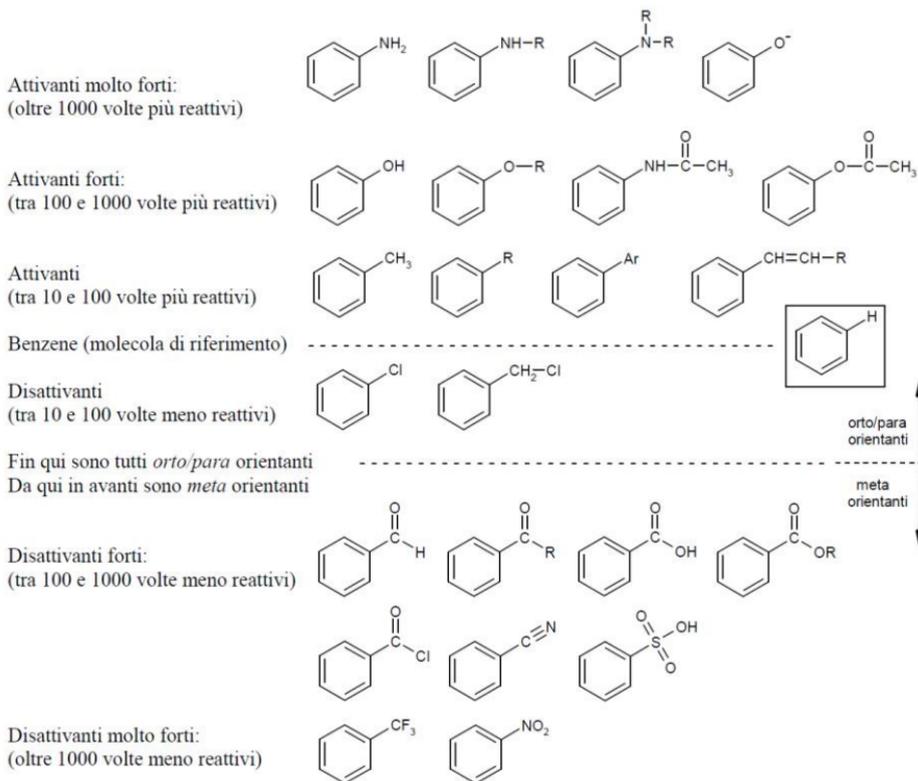
2-bromo-4-cloro-1-nitrobenzene



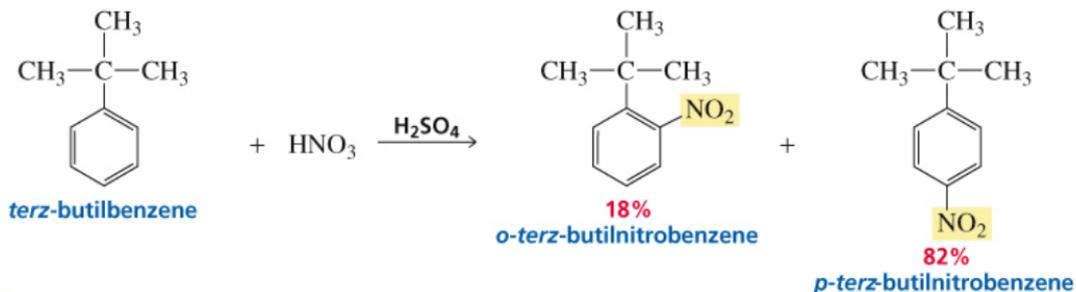
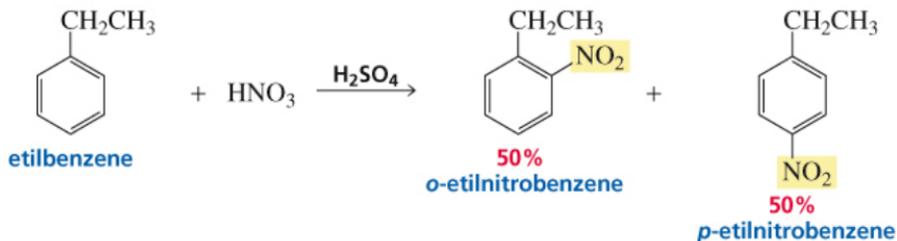
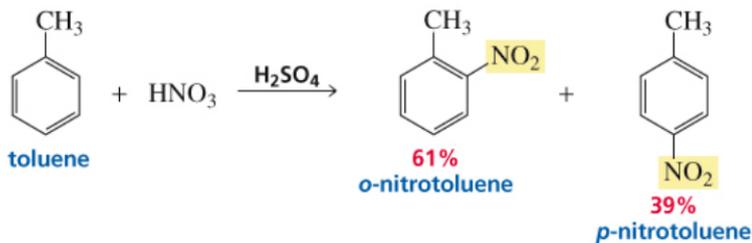
4-bromo-1-cloro-2-nitrobenzene



1-bromo-4-cloro-2-nitrobenzene

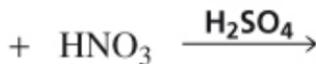
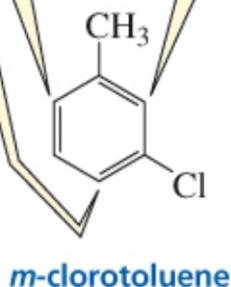


Prodotti delle reazioni di sostituzione elettrofila aromatica

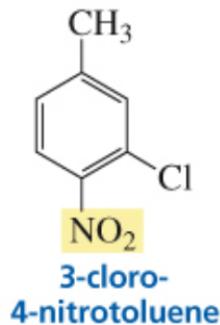


Prodotti delle reazioni di sostituzione elettrofila aromatica

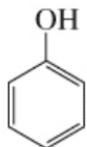
entrambi i sostituenti metile e cloro orientano il gruppo entrante nelle posizioni indicate



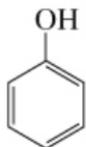
+



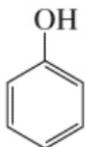
Scala di acidità



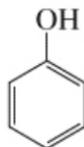
$pK_a = 10.20$



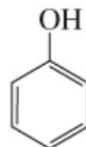
$pK_a = 10.19$



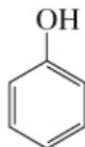
$pK_a = 9.95$
fenolo



$pK_a = 9.38$



$pK_a = 7.66$

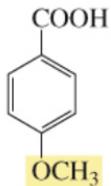


$pK_a = 7.14$

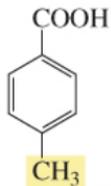


Bruice
Chimica Organica, II Ed.
EdiSES

Scala di acidità



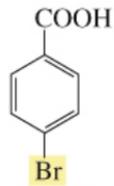
$pK_a = 4.47$



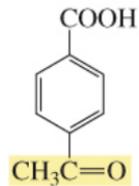
$pK_a = 4.34$



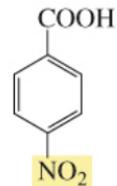
$pK_a = 4.20$



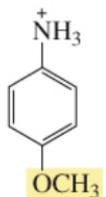
$pK_a = 4.00$



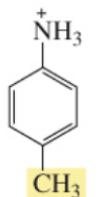
$pK_a = 3.70$



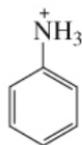
$pK_a = 3.44$



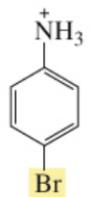
$pK_a = 5.29$



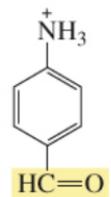
$pK_a = 5.07$



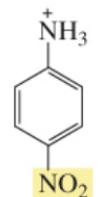
$pK_a = 4.58$



$pK_a = 3.91$

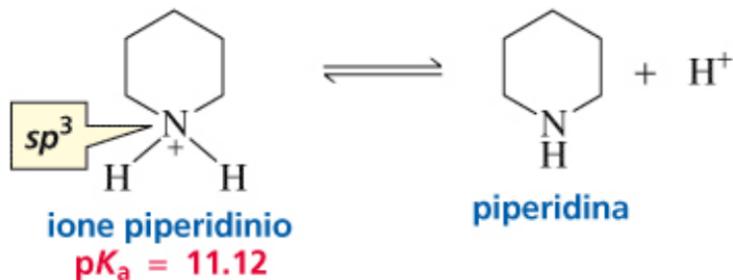
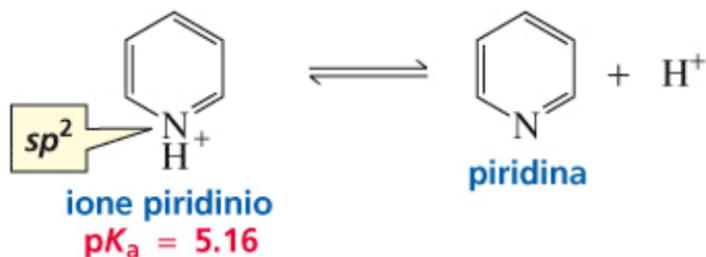


$pK_a = 1.76$



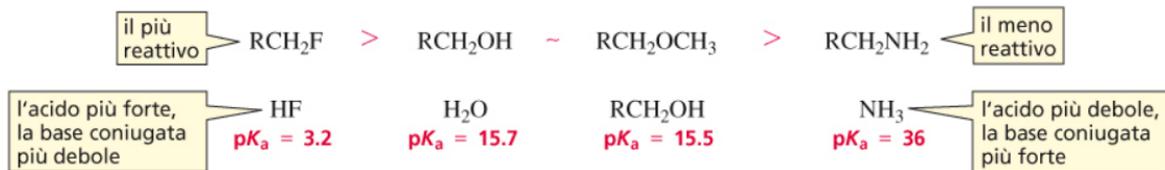
$pK_a = 0.98$

Confronto della basicità delle ammine

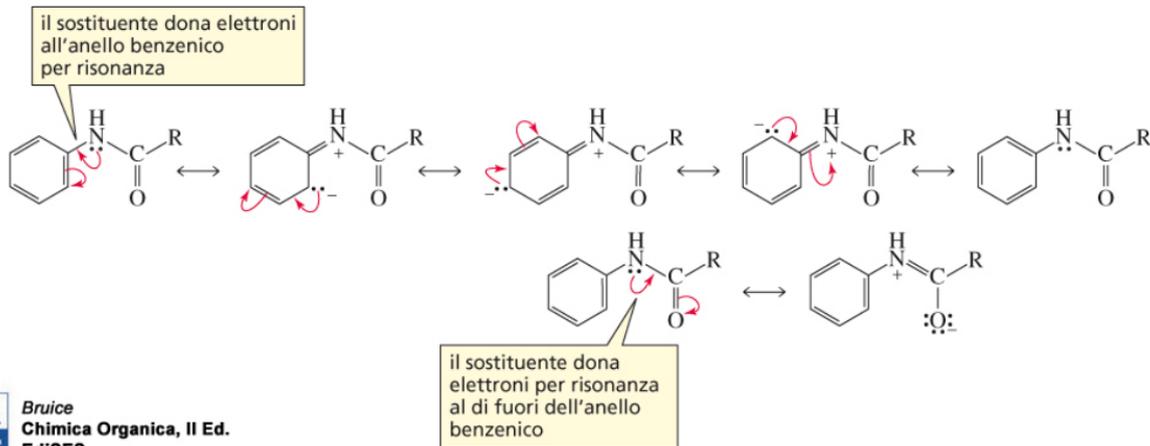


ammine

reattività relative



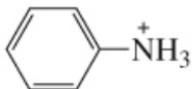
Risonanza di una anilide



Sistemare in una scala di basicità crescente le seguenti specie chimiche:
Propanammina, anilina, ione amiduro,



ione ammonio
 $\text{p}K_a = 10.8$



ione anilinio
 $\text{p}K_a = 4.58$

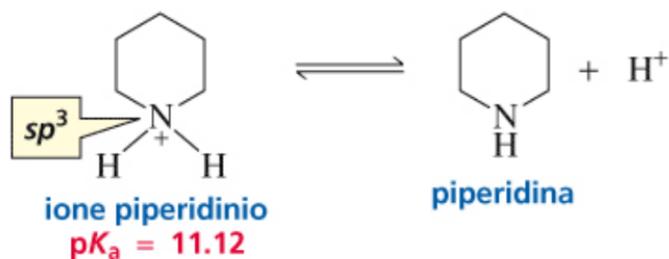
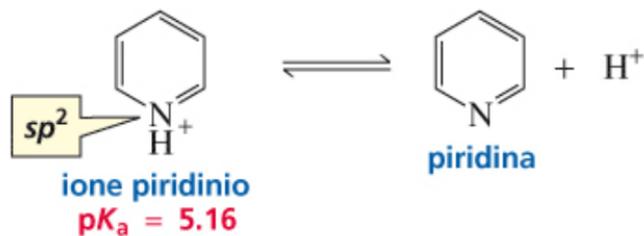


ammina
 $\text{p}K_a = 40$

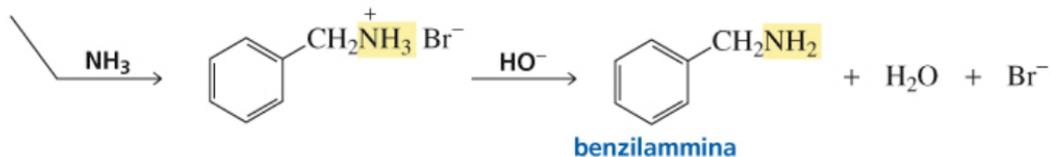
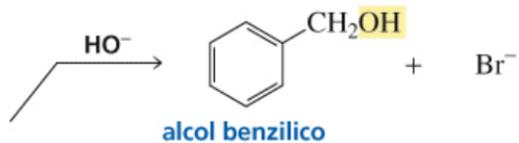


Bruice
Chimica Organica, II Ed.
EdiSES

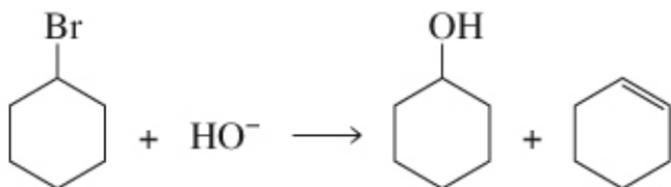
Sistemare in una scala di basicità crescente le seguenti specie chimiche:
Piridina, piperidina



Sostituzione eliminazione



sintesi



Bruice
Chimica Organica, II Ed.
EdiSES