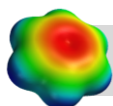


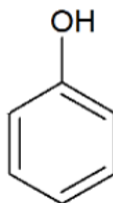


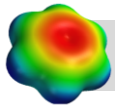
Reações do fenol e derivados



Fenol

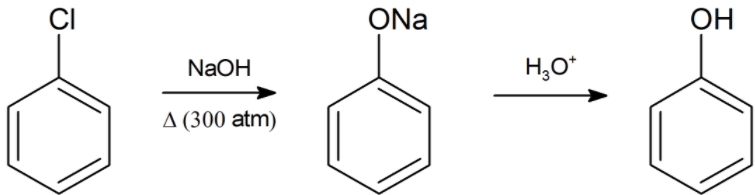
- Joseph Lister (1867): propôs o uso do fenol (ácido carbólico) na desinfecção de materiais cirúrgicos e feridas
- Hoje os termos “fenóis” e “compostos fenólicos” são usados de forma genérica para derivados Ar-OH



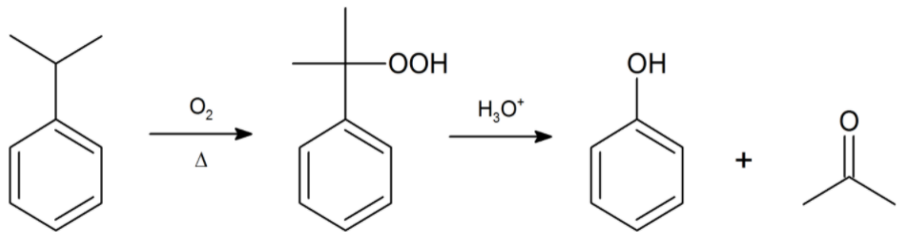


Preparo do fenol

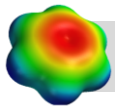
1. Processo Dow



2. Processo do cumeno

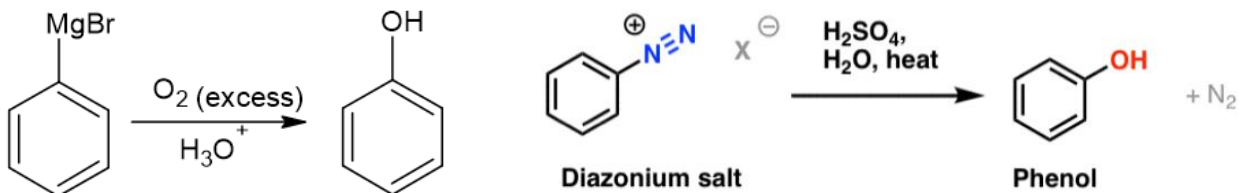


3



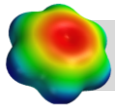
Outras vias para formação de fenol

1. Oxidação do fenilmagnésio (Grignard)
2. Hidrólise ácida de sal de diazônio



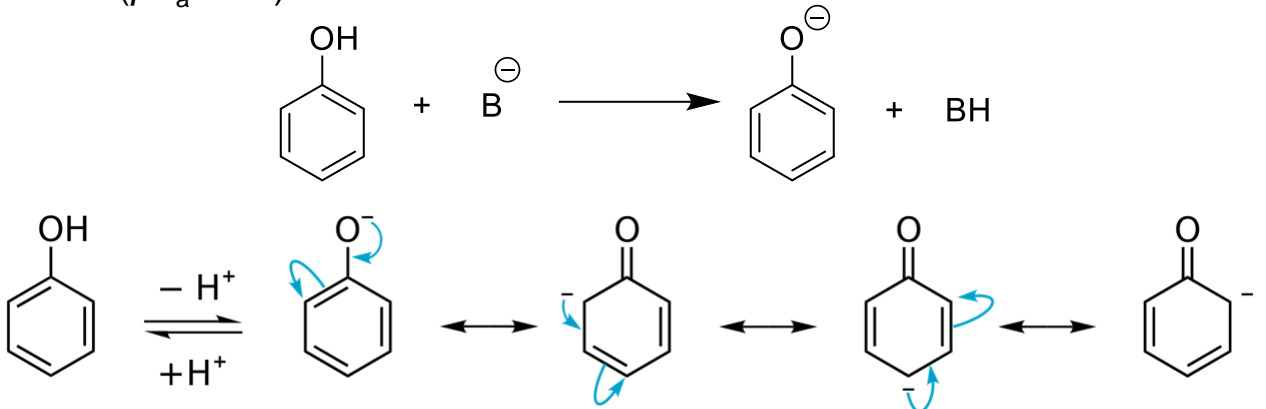
Inserir OH de forma branca

5

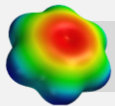


Reações com fenóis – ácido-base

- Reações ácido-base: fenol ($pK_a = 10$) é mais ácido que álcoois ($pK_a \sim 16$)

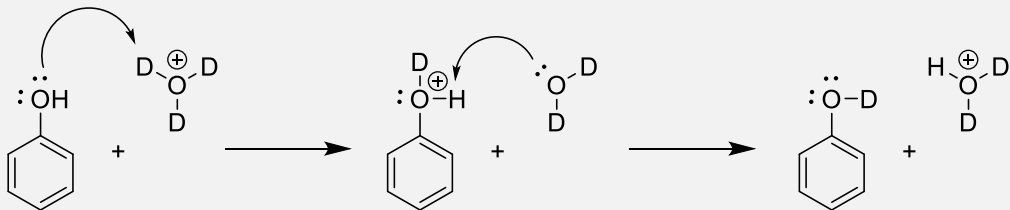


6

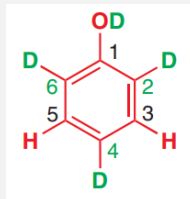


Reações com fenóis – ácido-base + S_EAr

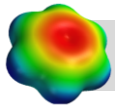
Um efeito interessante ocorre quando tratamos fenol com uma solução ácida de D_2O (água deuterada)



Produto formado:

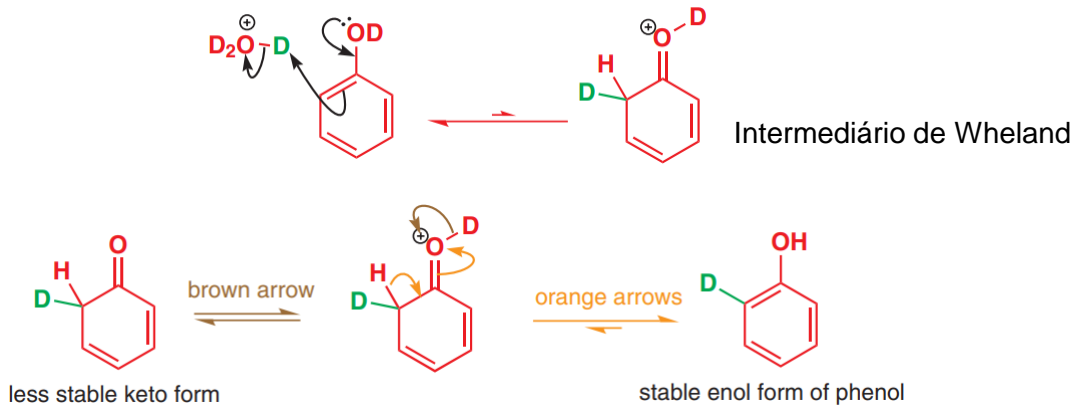


7

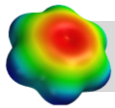


Reações com fenóis – S_EAr

- Reação: S_EAr (D substitui H)

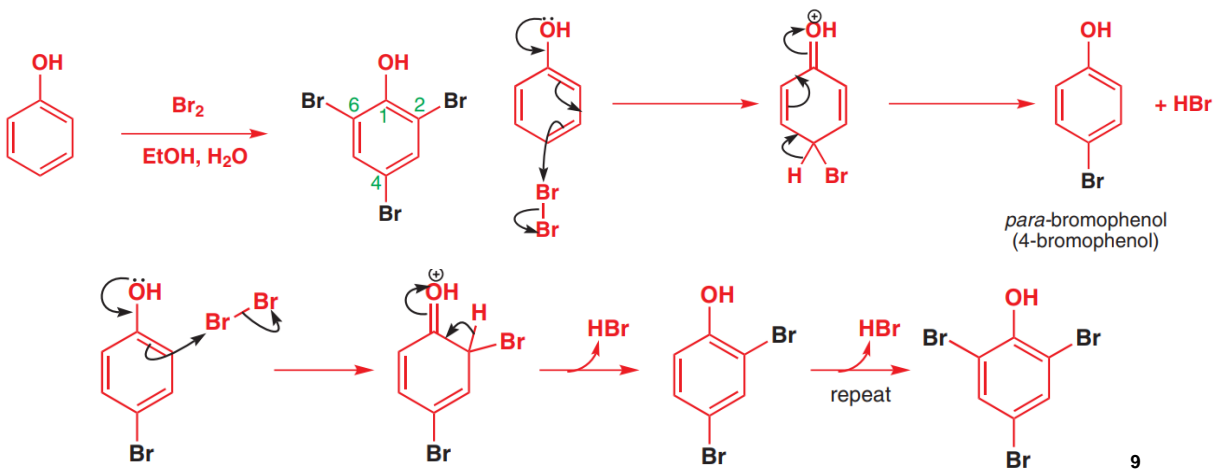


8

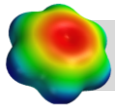


Reações com fenóis – S_EAr

- Reação: bromação

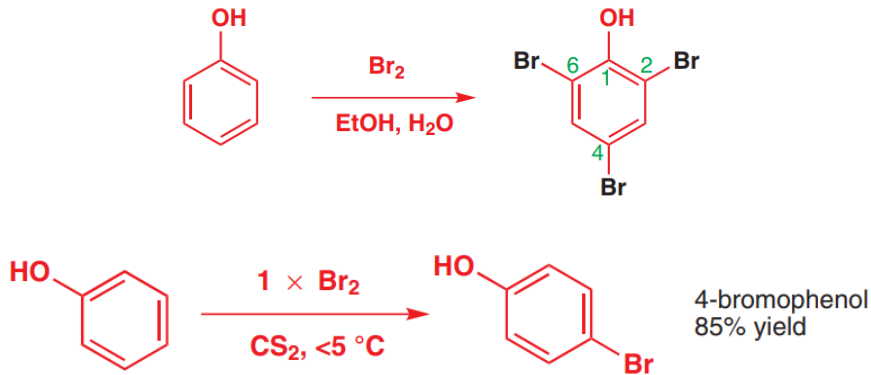


9

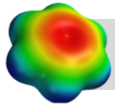


Reações com fenóis – S_EAr

- Reação: bromação

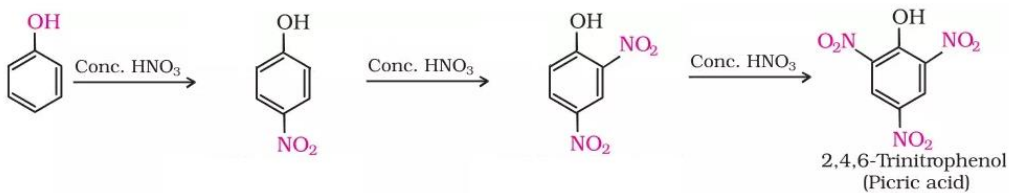
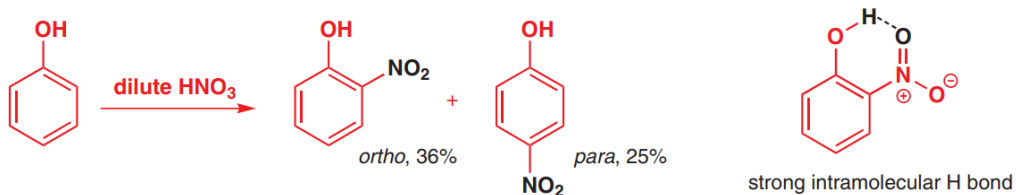


10

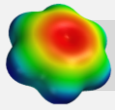


Reações com fenóis – S_EAr

- Reação nitração
- HNO_3 diluído em vez de $\text{HNO}_3/\text{H}_2\text{SO}_4$

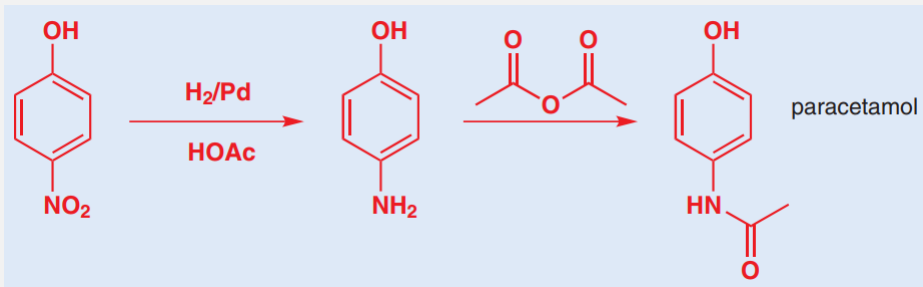


11

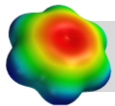


Derivados de fenóis

- Síntese do paracetamol

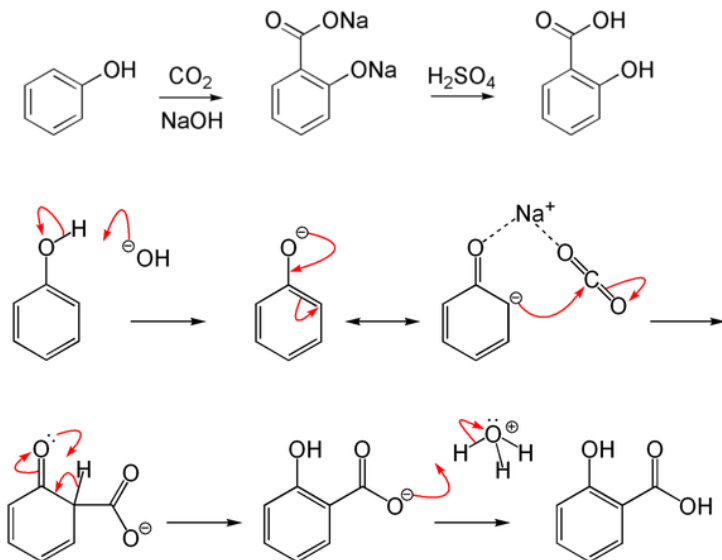


12

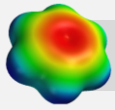


Derivados de fenóis

- Síntese do ácido salicílico (Kolbe-Schmidt)
- 100 atm, 125 °C

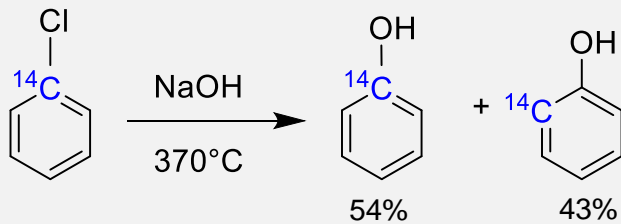
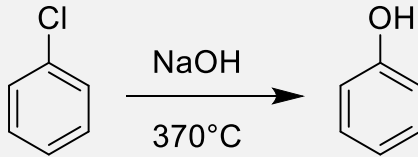


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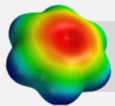


Reações com fenóis – S_NAr

- Reações de substituição nucleofílica

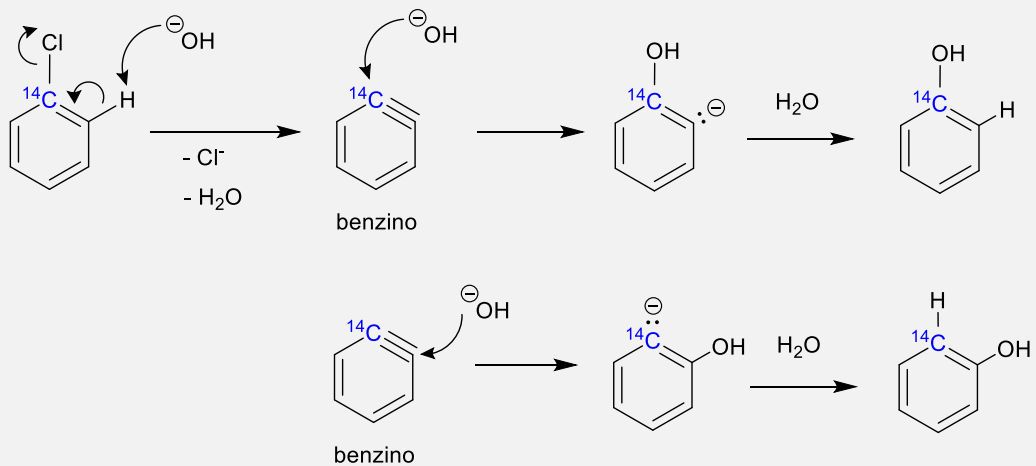


14

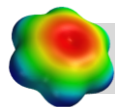


Reações com fenóis – S_NAr

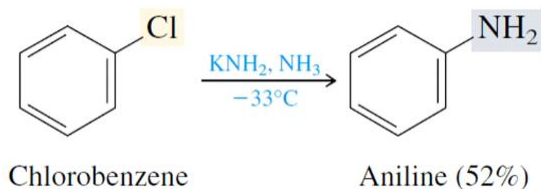
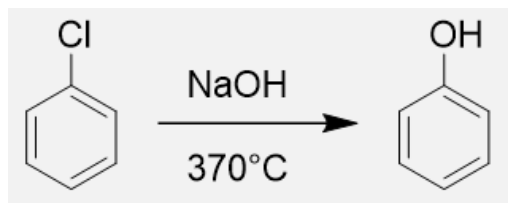
- Reações de substituição nucleofílica



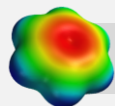
15



Reações com fenóis – S_NAr

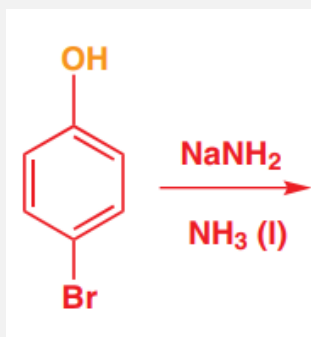


16

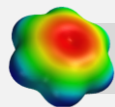


Exercício

- Indique o produto da seguinte reação com 1 ou 2 equivalentes de NH_2^-

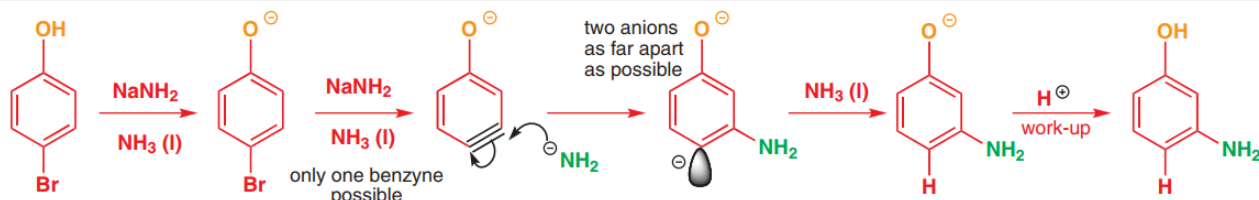


17

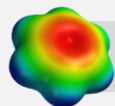


Exercício

- Indique o produto da seguinte reação com 1 ou 2 equivalentes de NH_2^-

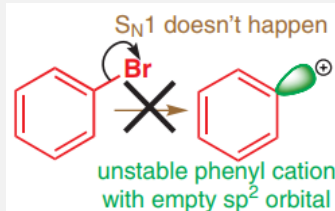
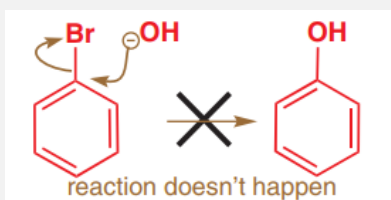


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Reações com fenóis – $\text{S}_{\text{N}}\text{Ar}$

- Produção de derivados fenólicos por $\text{S}_{\text{N}}\text{Ar}$

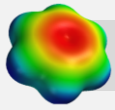


Em que condições um carbocátion instável como esse pode se formar?

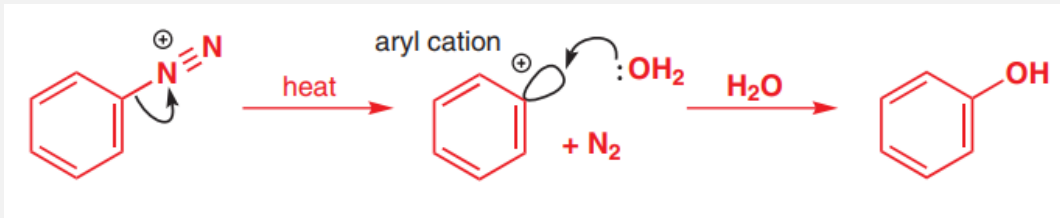
- A typical nucleophilic aromatic substitution has:**

- an oxygen, nitrogen, or cyanide nucleophile
- a halide for a leaving group
- a carbonyl, nitro, or cyanide group *ortho* and/or *para* to the leaving group.

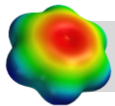
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Produção de fenol via sal de diazônio

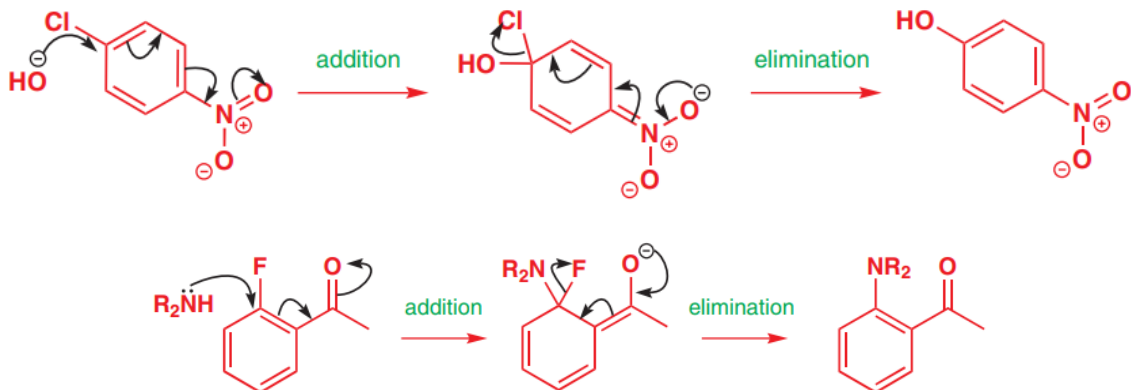


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Reações com fenóis – S_NAr

- Produção de derivados fenólicos por S_NAr



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