



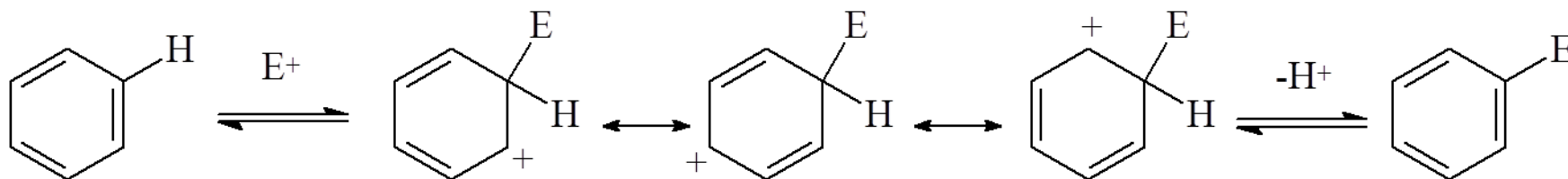
苯甲酸甲酯的硝化反應

Nitration of Methyl Benzoate

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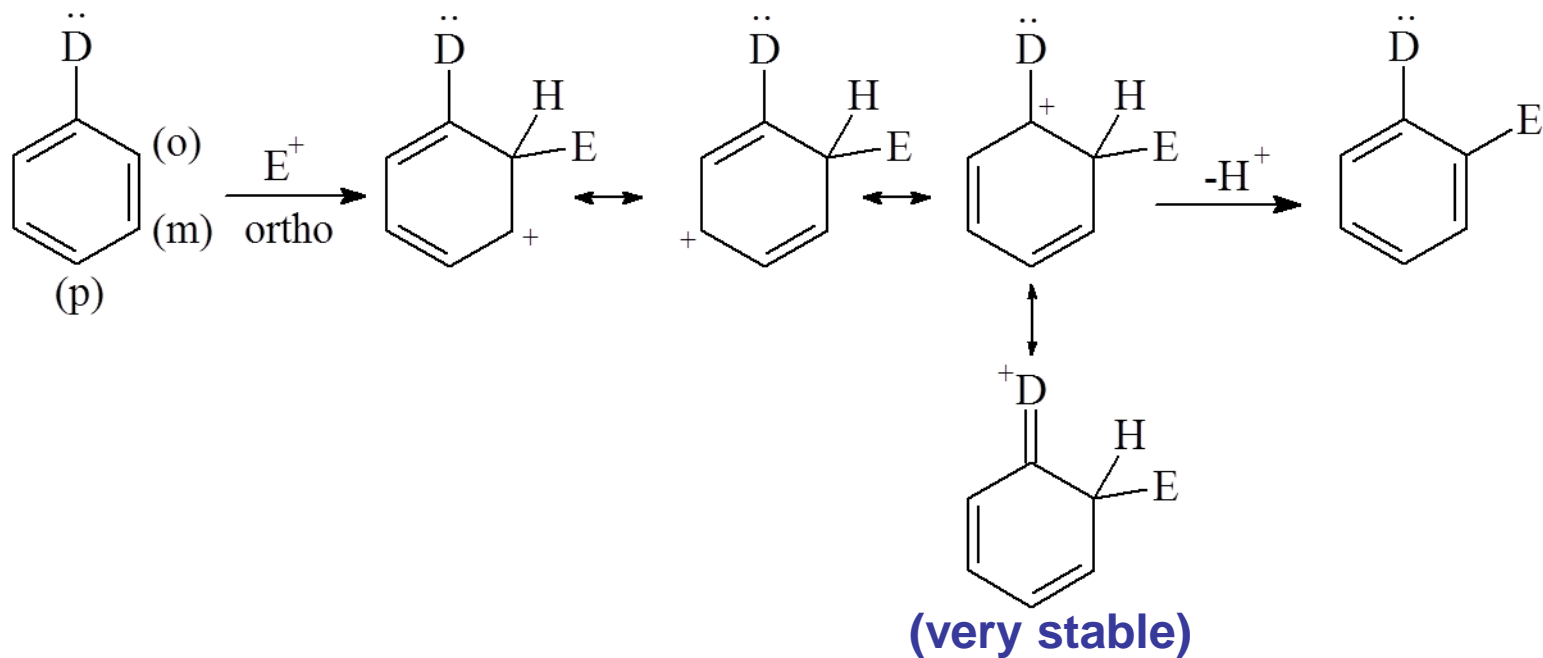
1. The mechanism of electrophilic aromatic substitution :



2. To generate the nitronium and hydronium ions:

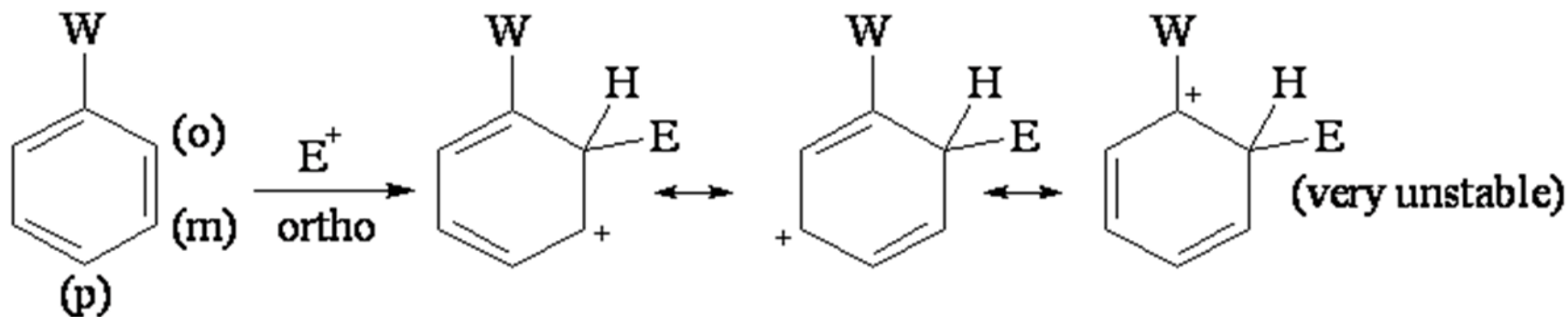


(1) The functional group is an electron-donating group: (Ex: $-NR_2$, $-OR$, ...activating group)



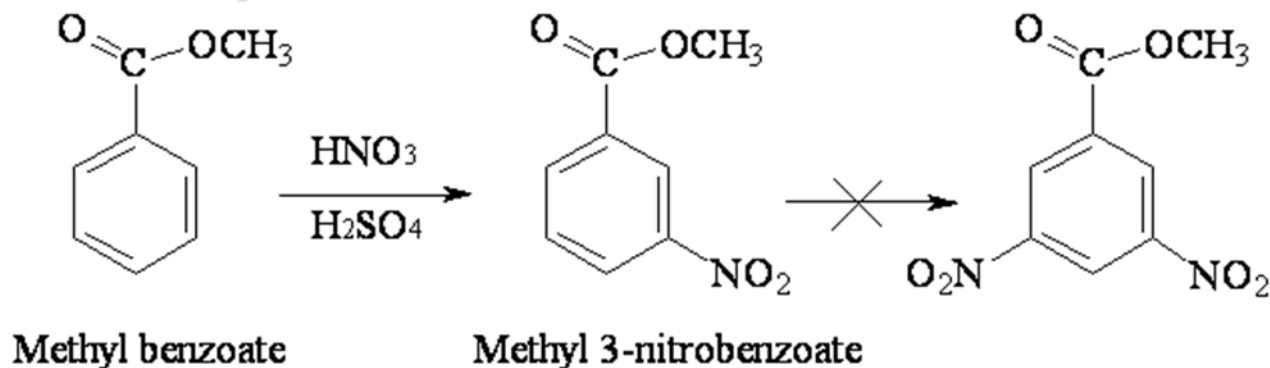
※ E.D. group \rightarrow prefer ortho para position

(2) The functional group is an electron-withdrawing group:
(Ex: $-\text{NO}_2$, $-\text{COR}$, $-\text{COOR}$, ...deactivating group)



※ E.W. group \rightarrow prefer meta position

Reaction equation:



3mL conc. H₂SO₄ in a 50-mL Erlenmeyer flask



↓(ice-water bath)

add 1.53g (1.4mL) methyl benzoate (dropwise)

↓(ice-water bath)

add the mixture of 1mL conc. H₂SO₄ and 1mL conc. HNO₃ (dropwise)

warm the mixture to r.t. (15min)



transfer the mixture to the beaker contains 12.5g cracked ice (→ white solid)



collect the solid (suction filtration)



wash it with the (3mL x 3) ice water



recrystallization with 5mL** CH₃OH (用量自行斟酌)



collect the crystal (suction filtration)



wash it with 3mL** ice-cold 1:2 MeOH/H₂O solution

↓
dry (by suction)
↓
weight
↓
calculate the % yield



1. 繳交產物並告知產物淨重。
2. 將產物結晶圖片上傳 Zuvio
3. 實驗問題：2, 4





The End !

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