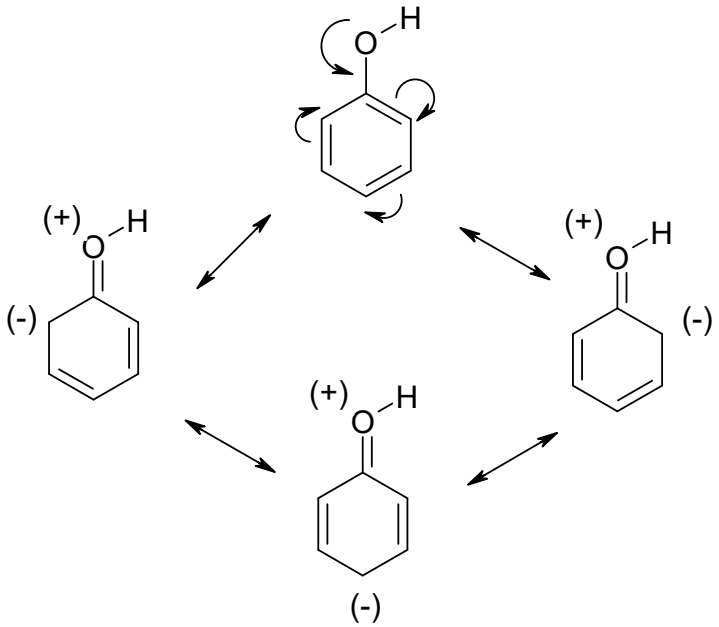
Answer on Question #72511, Chemistry / Organic Chemistry

Question:

Explain the mechanism of electrophilic aromatic substitution reaction of phenol and also explain why OH group in phenol acts as ortho & para director.

Answer:

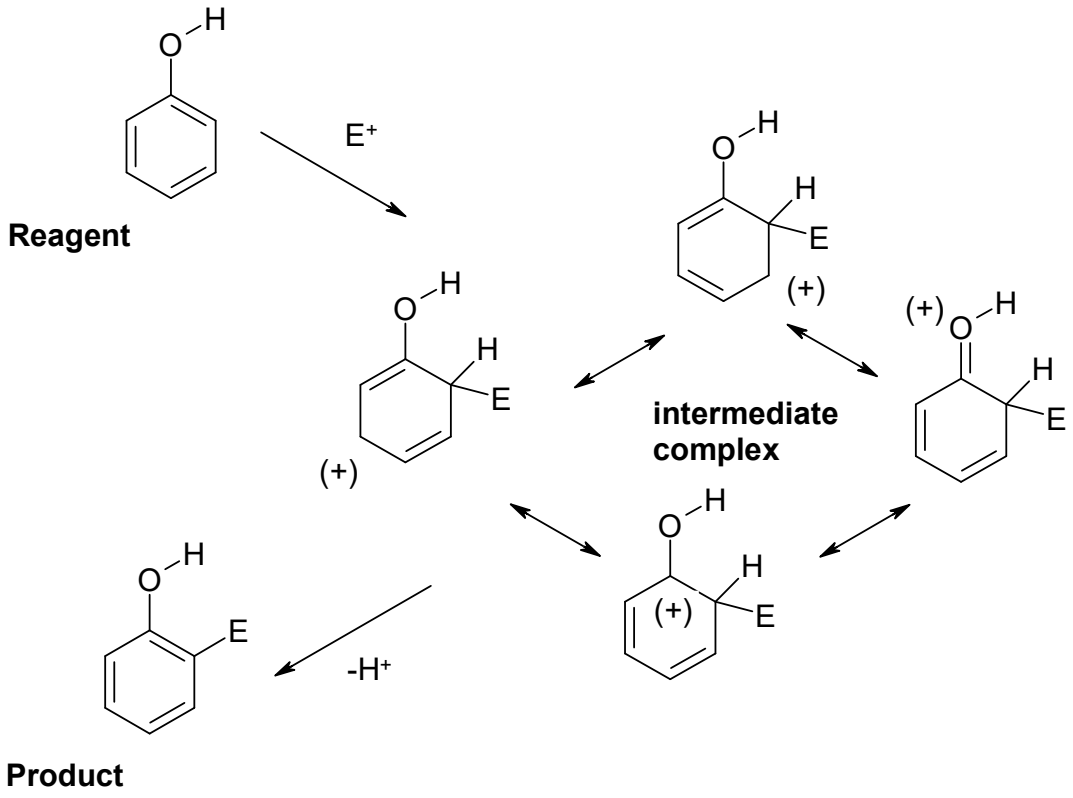
OH group in phenol has strong positive mesomeric effect:



As you can see, ***ortho and para positions*** have partial negative charge, and therefore electrophiles attack ***them***.

Mechanism of the reaction (for ***ortho*** position):

At the first step an electrophile (E^+) attacks the aromatic ring and at the second step the intermediate complex looses proton (H^+) and forms the product. Please see the scheme below. Also note that intermediate complex has four tautomeric forms.



For ***para*** position the mechanism is absolutely the same.