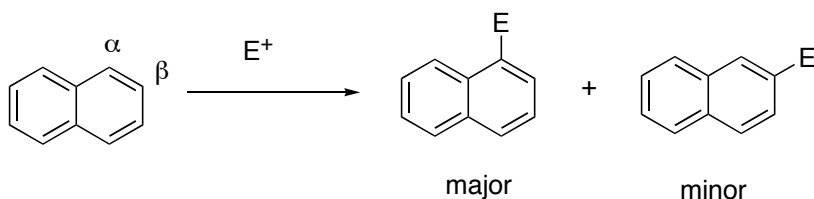
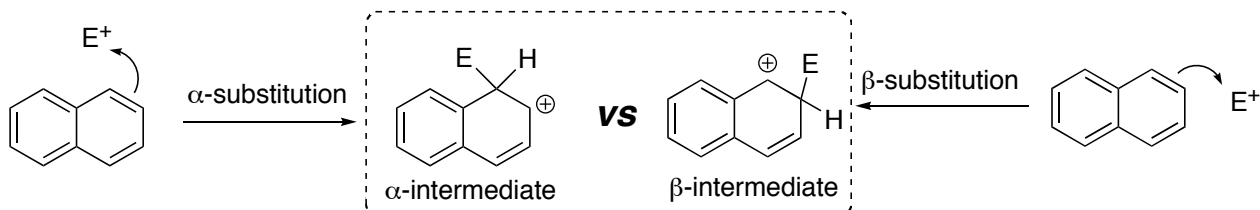


1. In general, electrophilic aromatic substitution reactions of naphthalene give primarily substitution at the α -carbon, with only minor substitution at the β -carbon.

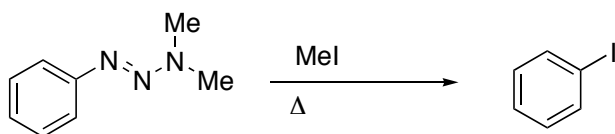


The rationale for this observation requires us to consider the cationic intermediates obtained from the two different reaction possibilities.

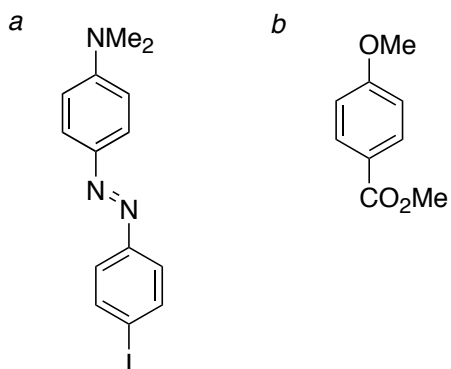


This reaction is under kinetic control, meaning that the α -intermediate is more stable than the β -intermediate. Using your knowledge of resonance structures and the value of aromaticity, provide a detailed explanation.

2. Provide a detailed mechanism



3. Provide a multistep syntheses from benzene any other materials



4. Provide a multistep synthesis from toluene and any other materials

