Question #58027, Chemistry / Organic Chemistry |

what so you understand by para-directing activators, para-directing deactivators and meta - directing deactivators

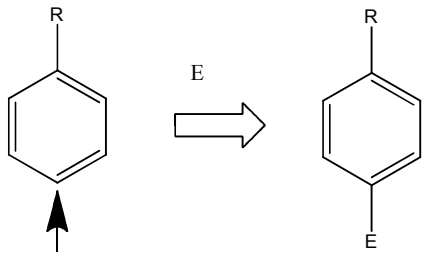
Answer:

Upon electrophilic aromatic substitution in benzene ring the substituents due to their electronic and structural properties determine the position of substitution as well as activate or deactivate aromatic ring.

According to their features in the reaction, all substituents can be sorted on the following groups:

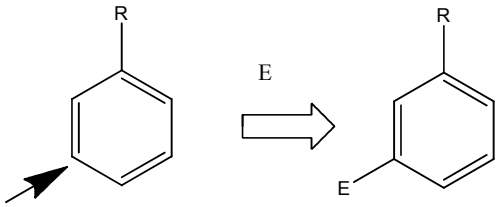
1) Para-directing activators. They direct substitution to the para-position and increase the rate of the reaction.
   For instance:
   -OH, -NR2, -OR

2) Para-directing deactivators. They direct substitution to the para-position and decrease the rate of the reaction.
   For instance:
   -Cl, -Br, -I



para-directing substitution

3) Meta-directing deactivators. They direct substitution to the meta-position and decrease the rate of the reaction. They involve all electron-withdrawing groups with exception of halogens.
   For instance:
   -NO_2, -COOH, - CONHR



meta-directing substitution