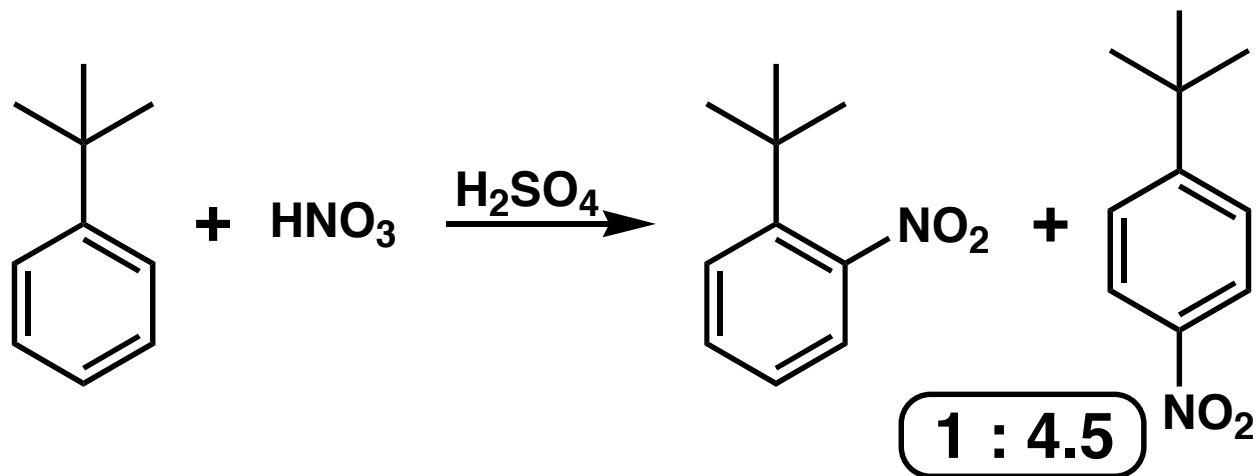
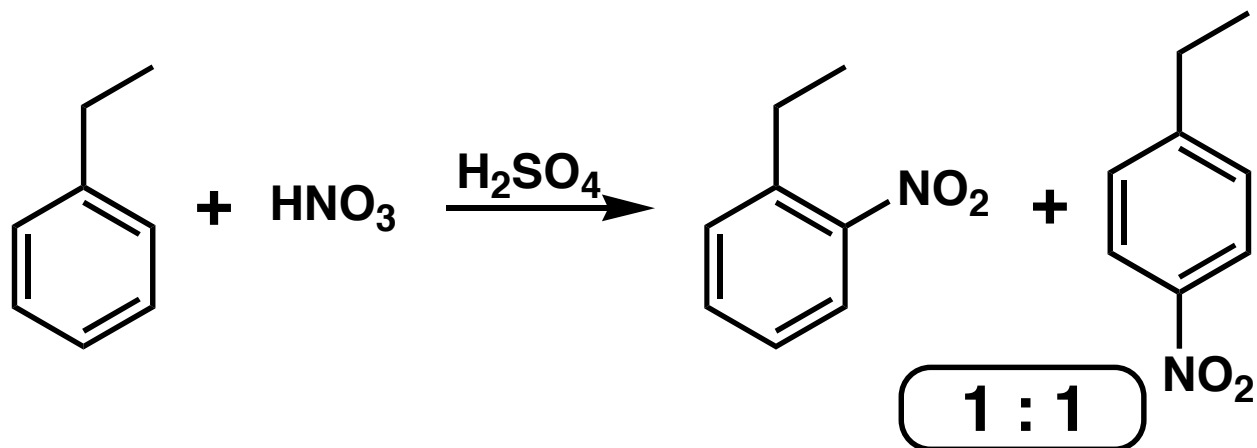


## General Considerations About Ortho vs. Para Substitution



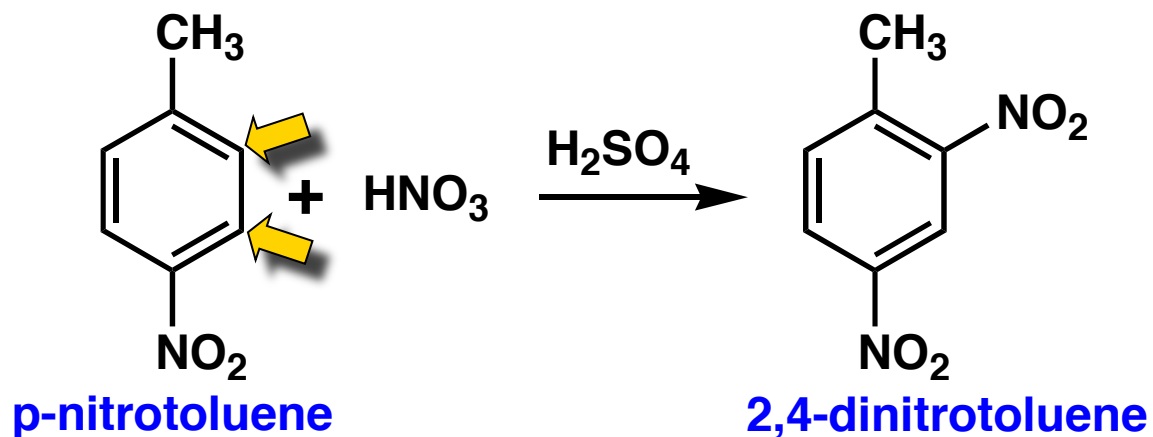
Ortho and para substitution have similar electronic considerations.  
Steric factors can have an influence on the ortho / para product ratio.



# Electrophile Orientation With Disubstituted Benzenes

With disubstituted benzenes:

- First consider the contributions of the individual substituents and determine if they direct to a **common position** to produce a major product.
- When substituents are in competition, **strongly activating** substituents will dominate weakly activating or deactivating ones.



# Summary

- Electrophiles preferentially attack ortho or para to electron-donating substituents such as (RO-, R<sub>2</sub>N-, RCONH-) and halo substituents, whereas electrophiles attack meta to electron-withdrawing groups such as carbonyl, -CN, -NO<sub>2</sub>, and -SO<sub>3</sub>H.
- The directing ability of a group is closely related to its ability to stabilize or destabilize the intermediate carbocation.

Give the major product of these reactions.

