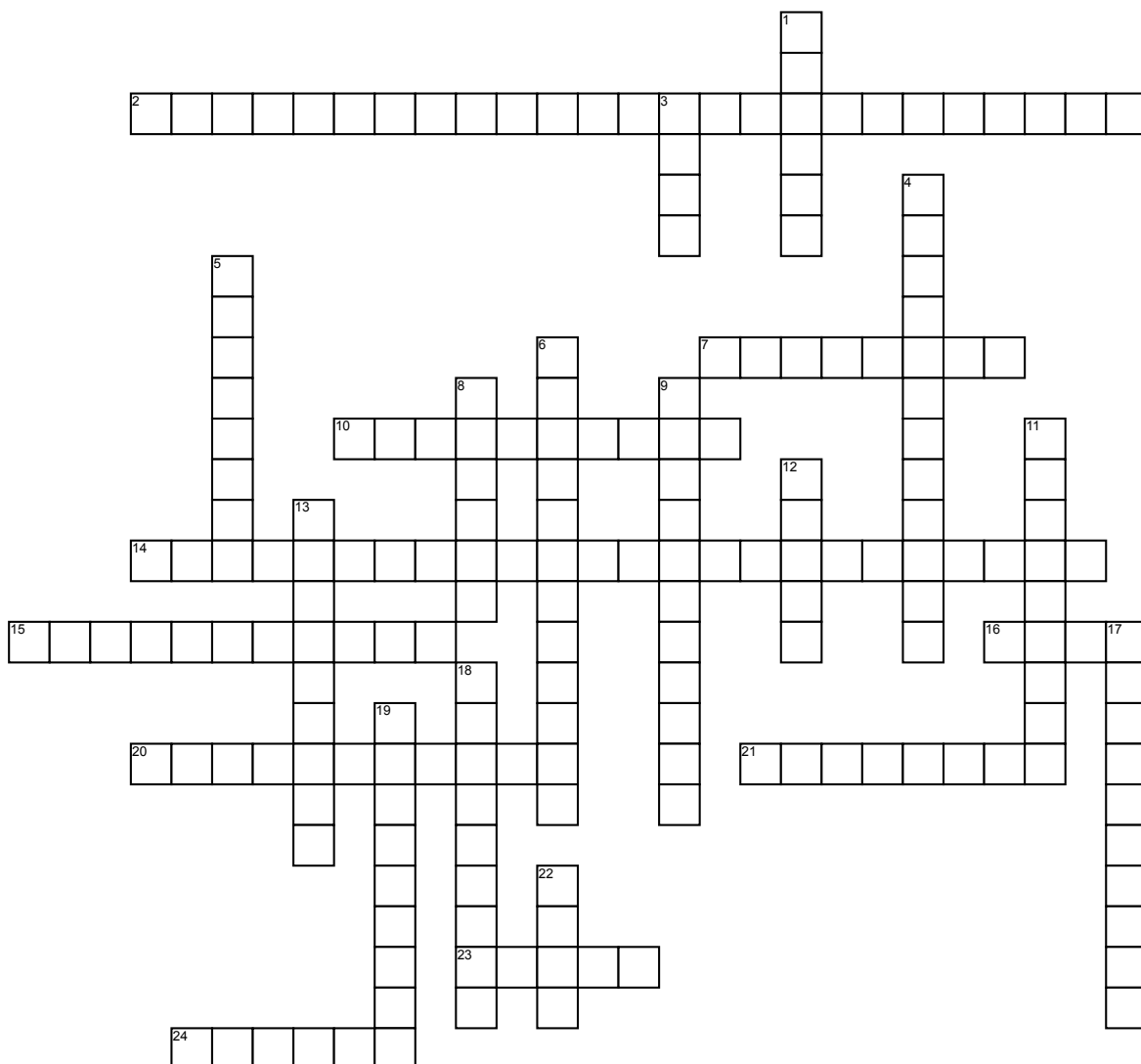


# Aromatic Chemistry



## Across

2. What type of ring aromatic modification reaction which includes features of working well on pyrroles, furans, and thiophenes which could occur best at the 2 5 positions and occur nearly as well at the 3 4 positions?

7. When pyrroles and strong polymers undergo ring modification by electrophilic aromatic substitution what type of compounds are formed?

10. What is the process in which an alkyl group is attached to an organic substrate via addition or substitution?

14. What type of ring aromatic modification reaction which would work well for both pyridine & quinoline, which also give substitution products when the negative charge can rest on the nitrogen in the intermediate species?

15. .... are also known as dynamic isomerism.

16. What substitution is known as the 1,4 disubstituted position on a benzene ring?

20. What is a positively charged carbon within an organic molecule?

21. Which imine is very unreactive, weakly basic ( $pK_a = 5.5$ ), is less reactive than benzene in Electrophilic Aromatic Substitution, and more reactive than benzene in Nucleophilic Aromatic Substitution reactions?

23. What group are de-activating and meta directing groups in nitrobenzene?

24. Mono-substituted benzene reacts to give a meta product in a reaction that is ..... than that seen for substitute upon benzene.

## Down

1. Mono-substituted benzene reacts to give an ortho/para product, in a reaction that is ..... than that seen for substitute upon benzene.

3. What is the relative rate of meta directing substituents?

4. What is the name of the rule which states that for a molecule to be aromatic, the number of electrons it contains must equal  $4n + 2$ ?

5. A cyclic system that is fully conjugated is .....

6. Meta directing substituents are ..... groups?

8. This word is one of the criteria for aromaticity when atoms are connected to each other to form a ring.

9. .... is the overlap of more than two 2p orbitals in a cyclic/acyclic system.

11. What involves only the movement of electrons and never atoms?

12. What substitution is known as the 1,2 disubstituted position on a benzene ring?

13. What class of synthetic organic heterocyclic compound is made when a nitrile and sodium azide react in a 1,3-dipolar cycloaddition reaction?

17. The electrophile that reacts with benzene within the Fredel-crafts acylation reaction with  $AlCl_3$  is an .....

18. Which other compound has a similar EAS reactivity to benzene when it comes to aromatic substitution?

19. What reaction describes the reaction where the diazonium ion reacts with cuprous salts?

22. What substitution is known as the 1,3 disubstituted position on a benzene ring?