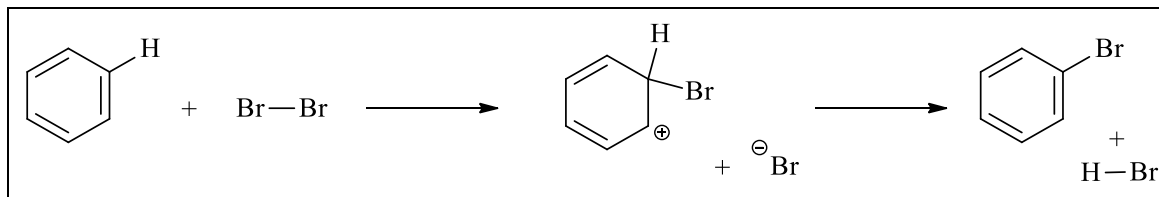


Marks
9

- Benzene can undergo an S_EAr reaction with bromine, Br_2 , as shown below. Demonstrate your understanding of this reaction by adding curly arrows to complete the mechanism.



Explain what each part of the abbreviation S_EAr means.

S =

E =

Ar =

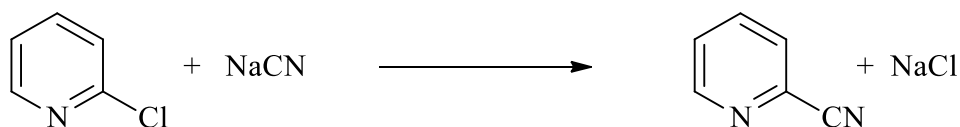
Identify one nucleophile and one electrophile in the scheme above.

nucleophile

electrophile

Iron(III) bromide, $FeBr_3$, is often added to the reaction shown above. Why?

2-Chloropyridine can undergo the following reaction with sodium cyanide.



This reaction also proceeds via a two-step mechanism and an ionic (*i.e.* charged) intermediate. Apply your understanding of organic reactions to propose a mechanism for this reaction.

If the reaction of benzene shown above is S_EAr , how would you classify this reaction of chloropyridine?