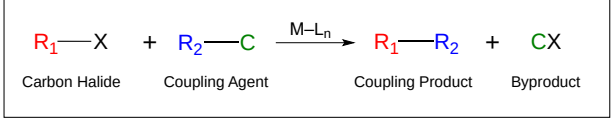
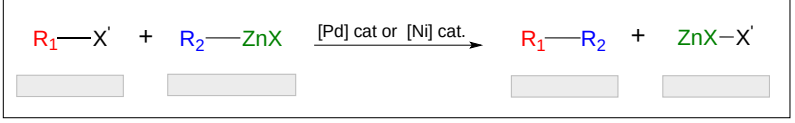
CONCEPT: NEGISHI COUPLING

- The Negishi reaction involves the coupling between a carbon halide and an organozinc halide with a Pd or Ni catalyst.
  - □ The reaction uses a Pd or Ni catalyst in the formation of _____ or _____ products.

Cross-Coupling Reaction

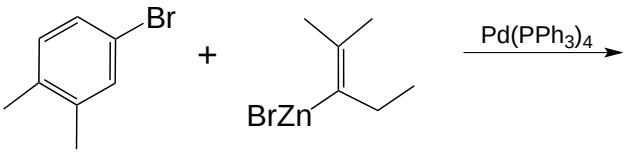


Negishi Coupling Reaction



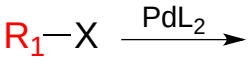
  - □ The **R_1** group of the carbon halide is represented by a(n) *vinyl*, *aryl* + _____, _____, or _____ group.
  - □ The **R_2** group of the organozinc halide is represented by a(n) *vinyl*, *aryl* + _____, _____, or _____ group.
  - □ The **C** group = ZnX with the **X** group represented by a(n) _____ or _____.
  - □ The **X'** group of the carbon halide is represented by a Cl, Br, I or OTf group.

EXAMPLE: Determine the product from the following Negishi Coupling Reaction.

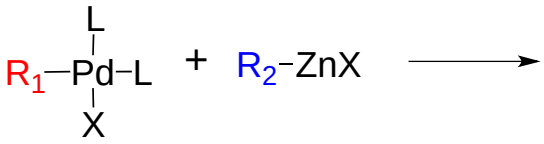


Coupling Mechanism

1) **Oxidative Addition**: Involves the addition of the carbon halide to the transition metal complex.



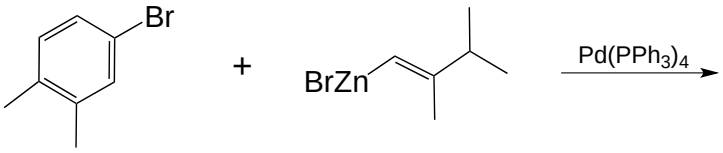
2) **Transmetallation**: The **R_2** group of the organozinc compound transfers from Zn to the Pd complex.



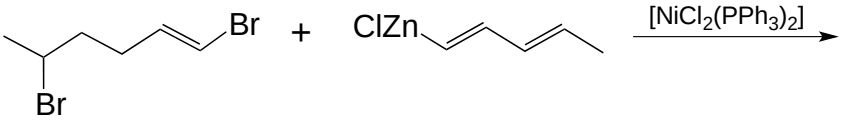
3) **Reductive Elimination**: This step forms the coupling product.

CONCEPT: NEGISHI COUPLING

PRACTICE: Determine the product from the following Negishi Coupling Reaction.



PRACTICE: Determine the product from the following Negishi Coupling Reaction.



PRACTICE: Determine compounds **A** and **B** from the following reaction sequence.