CHEM – 647

Organic synthesis



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DISCONNECTIONS OF ALKENES



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Wittig reaction

$$\rightarrow$$
 Ph \rightarrow Ph₃P—



saturated hydrocarbons

Heterogeneous catalysts such as Pd or Pt on activated carbon

Homogeneous catalysts *e.g.* the Wilkinson's catalyst chlorotris(triphenylphosphine)rhodium(I), RhCl(Ph₃P)₃



saturated hydrocarbons

$$R^{1} \xrightarrow{R^{2}} \frac{\mathbf{FGI}}{\mathbf{R}^{1}} + R^{2}CHC$$

$$R^{1} \xrightarrow{R^{2}} \frac{\mathbf{FGI}}{\mathbf{R}^{2}} \xrightarrow{R^{2}} R^{1}CH_{2}MgBr + R^{2}CHC$$



saturated hydrocarbons

$$P_h \longrightarrow P_h \longrightarrow P_h$$

$$\Longrightarrow$$
 Ph $^+$ PPh3 + CHO

Synthesis:

PhCH₂Br
$$\xrightarrow{\text{1. PPh}_3}$$
 Ph $\xrightarrow{\text{PPh}_3}$ $\xrightarrow{\text{n-BuCHO}}$ Ph $\xrightarrow{\text{Ph}}$ TM



saturated hydrocarbons

Synthesis:

PhBr
$$\frac{1. \text{ Mg}, \text{Et}_2\text{O}}{2. } \xrightarrow{\text{OH}} \frac{1. \text{ H}_3\text{PO}_4}{2. \text{ H}_2 \cdot \text{Pd} \cdot \text{C}} \xrightarrow{\text{TM}}$$



saturated hydrocarbons

Exercise

Attempt all possible disconnections of given molecules. Write the synthesis from the best route.

$$\propto \sim$$