

Альдегиды и кетоны: свойства и способы получения

- $$\triangle \xrightarrow{\text{Br}_2} \text{X}_1 \xrightarrow[\text{H}_2\text{O}]{2\text{NaOH}} \text{X}_2 \xrightarrow{\text{CuO, t}} \text{X}_3 \xrightarrow[\text{KOH}]{\text{KMnO}_4} \text{X}_4 \longrightarrow \text{CH}_4 \longrightarrow \text{HCHO}$$
- $$\text{C}_6\text{H}_{12}\text{O}_6 \longrightarrow \text{C}_2\text{H}_6\text{O} \xrightarrow[\text{t}]{\text{H}_3\text{PO}_4} \text{X}_1 \longrightarrow \text{CH}_3\text{CHO} \begin{cases} \xrightarrow{+\text{HCN}} \text{X}_2 \\ \xrightarrow{+\text{этандиол}} \text{X}_3 \\ \xrightarrow{+[\text{Ag}(\text{NH}_3)_2]\text{OH}} \text{X}_4 \end{cases}$$
- $$\text{пропен} \xrightarrow{\text{HBr, H}_2\text{O}_2} \text{X}_1 \xrightarrow{\text{Mg, эфир}} \text{X}_2 \xrightarrow{\text{HCHO}} \text{X}_3 \rightarrow \text{бутанол-1} \xrightarrow{\text{CuO}} \text{X}_4 \xrightarrow{\text{PCl}_5} \text{X}_5 \rightarrow \text{бутин-1} \rightarrow \text{бутанон}$$
- $$\text{CH}_3\text{ONa} \xrightarrow{\text{HCl}} \text{X}_1 \longrightarrow \text{HCHO} \begin{cases} \xrightarrow{+\text{X}_1} \text{X}_3 \xrightarrow{+\text{X}_1} \text{X}_4 \\ \xrightarrow{+[\text{Ag}(\text{NH}_3)_2]\text{OH}} \text{X}_2 \end{cases}$$

пропанол-1 $\uparrow$
- $$\text{метаналь} \rightarrow \text{метанол} \rightarrow \text{толуол} \xrightarrow{2\text{Cl}_2} \text{X}_1 \rightarrow \text{бензальдегид} \xrightarrow{\text{Br}_2 \text{ p-p}} \text{X}_2$$
- $$\text{CH}\equiv\text{C Ag} \xrightarrow{\text{CH}_3\text{Cl}} \text{X}_1 \xrightarrow{\text{H}_2\text{O, Hg}^{2+}} \text{X}_2 \begin{cases} \xrightarrow{+\text{H}_2} \text{X}_3 \\ \xrightarrow{\text{CH}_3\text{COOH}} \text{X}_4 \end{cases}$$
- $$\text{CaC}_2 \rightarrow \text{C}_2\text{H}_2 \xrightarrow{\text{HCl изб.}} \text{X}_1 \rightarrow \text{ацетальдегид} \rightarrow \text{этанол} \rightarrow \text{X}_2 \rightarrow \text{этиленгликоль} \xrightarrow{\text{CuO}} \text{X}_3$$
- $$\text{этилен} \rightarrow \text{ацетальдегид} \xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7, \text{H}^+} \text{X}_1 \rightarrow (\text{CH}_3\text{COO})_2\text{Ca} \xrightarrow{\text{t}} \text{X}_2 \xrightarrow{\text{CH}_3\text{MgCl}} \text{X}_3 \xrightarrow{\text{HCl}} \text{X}_4$$
- $$\text{циклогексан} \xrightarrow{\text{Cl}_2} \text{X}_1 \rightarrow \text{циклогексен} \xrightarrow{\text{KMnO}_4, \text{H}^+} \text{X}_2 \xrightarrow{\text{CaCO}_3} \text{X}_3 \xrightarrow{\text{t}} \text{X}_4$$
- $$\text{мета-бромтолуол} \xrightarrow{\text{Cl}_2, \text{свет}} \text{X}_1 \xrightarrow{\text{NaOH (водн.)}} \text{X}_2 \xrightarrow{\text{CuO}} \text{X}_3 \xrightarrow{\text{KMnO}_4, \text{KOH}} \text{X}_4 \xrightarrow{\text{KOH, t}} \text{X}_5$$
- $$\text{C}_6\text{H}_6 \xrightarrow{\text{HNO}_3} \text{X}_1 \xrightarrow[\text{AlCl}_3]{\text{CH}_3\text{Cl}} \text{X}_2 \begin{cases} \xrightarrow{\text{Cl}_2, \text{свет}} \text{X}_3 \longrightarrow \text{X}_4 \\ \xrightarrow{2\text{Cl}_2, \text{свет}} \text{X}_5 \longrightarrow \text{X}_6 \end{cases}$$

$\text{X}_4 \rightarrow \text{X}_7$
 $\text{X}_6 \rightarrow \text{Cu}(\text{OH})_2$
- $$\text{кумол} \rightarrow \text{ацетон} \xrightarrow{\text{H}_2, \text{кат.}} \text{X}_1 \rightarrow \text{C}_3\text{H}_6 \xrightarrow{\text{HBr, H}_2\text{O}_2} \text{X}_2 \rightarrow \text{спирт} \xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7, \text{H}^+} \text{пропаналь} \xrightarrow{\text{Cu}(\text{OH})_2} \text{X}_3$$