**ionization**

The generation of one or more ions. It may occur, e.g. by loss of an electron from a neutral molecular entity, by the unimolecular heterolysis of such an entity into two or more ions, or by a heterolytic substitution reaction involving neutral molecules, such as:

\[
\begin{align*}
  \text{H}_3\text{C}-\text{COOH} + \text{H}_2\text{O} & \rightarrow \text{H}_3\text{O}^+ + \text{H}_3\text{C}-\text{COO}^- \\
  \text{Ph}_3\text{CCl} + \text{AlCl}_3 & \rightarrow \text{Ph}_3\text{C}^+ + \text{AlCl}_4^-
\end{align*}
\]

(electrophile assisted)

\[
\begin{align*}
  \text{Ph}_3\text{CCl} & \rightarrow \text{Ph}_3\text{C}^+ \text{Cl}^-
\end{align*}
\]

(ion pair, in benzene)

The loss of an electron from a singly, doubly, etc. charged cation is called second, third, etc. ionization. This terminology is used especially in mass spectroscopy.

*See also:* dissociation, ionization energy

**Source:**

PAC, 1994, 66, 1077 (*Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994)*) on page 1127