

# Common Numbering for Mathematical and Chemical Equations

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## Question:

How can we give common sequential numbers to mathematical equations and chemical equations?

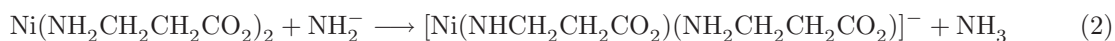
## Answer:

The ChemEquation and like environments supported by the chemist (or chmst-ps) package use a common counter to the equation and like environments of L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>. Hence, what we should do is to enumerate them sequentially. For example, the following code:

```
%\usepackage{chmst-ps}
%\usepackage{xymtexp}
%\usepackage{graphicx}
\begin{equation}
\log\left[\frac{(k_{1c}/k_{1t})_{1}}{(k_{1c}/k_{1t})_{2}}\right]
=\frac{\Delta E}{2.303R}\left[\frac{1}{T_{2}}-\frac{1}{T_{1}}\right]
\label{eq:1}
\end{equation}
\begin{ChemEquation}
Ni(NH_{2}CH_{2}CH_{2}CO_{2})_{2} + NH_{2}^{-} \longrightarrow
[Ni(NHCH_{2}CH_{2}CO_{2})(NH_{2}CH_{2}CH_{2}CO_{2})]^{-} + NH_{3}
\label{eq:2}
\end{ChemEquation}
```

typesets equations which numbered sequentially:

$$\log \left[ \frac{(k_{1c}/k_{1t})_1}{(k_{1c}/k_{1t})_2} \right] = \frac{\Delta E}{2.303R} \left[ \frac{1}{T_2} - \frac{1}{T_1} \right] \quad (1)$$



Structural formulas drawn by the X<sup>M</sup>TeX system can be included in the ChemEquation environment as part of a organic reaction scheme. For example, the following code:

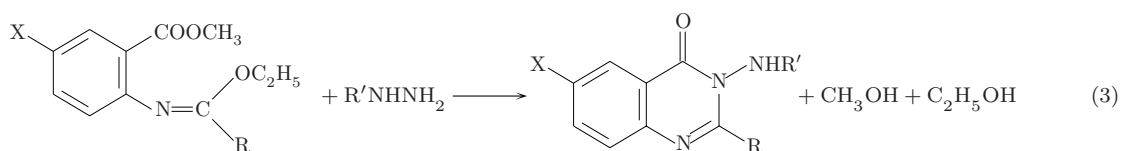
```
\begin{ChemEquation}\footnotesize
\raisebox{5pt}{\scalebox{0.8}{%
\begin{Xymcompd}(1200,600)(100,100){-}{-}
\bzdrv{2==COOCH$_3$};3==%
\ryl(4==N){4D==\rtrigonal{1==(y1);0==C;2==R;3==OC$_2$H$_5$}};6==X}
\end{Xymcompd}} \quad
+ R^{\prime}\text{NHNH}_{2} \llongrightarrow
\raisebox{5pt}{\scalebox{0.8}{%
```

```

\begin{XyMcompd}(1100,600)(100,250){}{
\decaheterov[cfhk]{2==N;4==N}{1D==O;2==NHR$^{\prime}$;3==R;7==X}
\end{XyMcompd}}
+ CH_{3}OH + C_{2}H_{5}OH
\end{ChemEquation}

```

generates a reaction equation:



which is numbered sequentially.

The sizes of the respective structural formulas are reduced by using the `\scalebox` command of the `graphicx` package. They are shifted vertically by means of the `\raisebox` command of the `graphicx` package. The sizes of the reagent and of the released alcohols are reduced by the command `\footnotesize`.