The chemarr package

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Abstract

Very often chemists need a longer version of reaction arrows (`\rightleftharpoons`) with the possibility to put text above and below. Analogous to amsmath's `\xrightarrow` and `\xleftarrow` this package provides the macro `\xrightleftharpoons`.

Contents

1 Usage

`\xrightleftharpoons` This LaTeX package defines `\xrightleftharpoons`. It prints extensible arrows (harpoons), usually used in chemical reactions. It allows to put some text above and below the harpoons and can be used inside and outside of math mode.

The package is based on amsmath, thus it loads it, if necessary.

1.1 Example

```
1 ⟨*example⟩
2 \documentclass{article}
3 \usepackage{chemarr}
4 \begin{document}
5 \begin{center}
6   left
7   \xrightleftharpoons[\text{below}]{\text{above}}
8   right
9 \end{center}
10 \[
11   A
12   \xrightleftharpoons[T \geq 400\,\mathrm{K}]{p > 10\,\mathrm{hPa}}
13   B
14 \]
```

```
\end{document}
```
⟨/example⟩

The result:

$$\text{left} \underset{\text{below}}{\overset{\text{above}}{\rightleftharpoons}} \text{right}$$

$$A \underset{T\geq 400\,\mathrm{K}}{\overset{p>10\,\mathrm{hPa}}{\rightleftharpoons}} B$$

2 Implementation

⟨*package⟩

Package identification.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{chemarr}%
  [2006/02/20 v1.2 Chemical reaction arrows (HO)]
\RequirePackage{amsmath}
```

The package amsmath is needed for the following commands:
`\ext@arrow`, `\@ifnotempty`, `\arrowfill@`
`\relbar`, `\std@minus`
`\@ifempty`, `\@xifempty`, `\@xp`

`\xrightleftharpoons` In `fontmath.ltx` `\rightleftharpoons` is defined with a vertical space of 2pt.

```
\newcommand{\xrightleftharpoons}[2][]{%
  \ensuremath{%
    \mathrel{%
      \settoheight{\dimen@}{\raise 2pt\hbox{$\rightharpoonup$}}%
      \setlength{\dimen@}{-\dimen@}%
      \edef\CA@temp{\the\dimen@}%
      \settoheight\dimen@{$\rightleftharpoons$}%
      \addtolength{\dimen@}{\CA@temp}%
      \raisebox{\dimen@}{%
        \rlap{%
          \raisebox{2pt}{%
            $%
            \ext@arrow 0359\rightharpoonupfill@{\hphantom{#1}}{#2}%
            $%
          }%
        }%
        \hbox{%
          $%
          \ext@arrow 3095\leftharpoondownfill@{#1}{\hphantom{#2}}%
          $%
        }%
      }%
    }%
  }%
}
```

`\leftharpoondownfill@`

```
\newcommand*{\leftharpoondownfill@}{%
  \arrowfill@\leftharpoondown\relbar\relbar
}
```

`\rightharpoonupfill@`

```
\newcommand*{\rightharpoonupfill@}{%
  \arrowfill@\relbar\relbar\rightharpoonup
}
```

⟨/package⟩

3 Installation

CTAN. This package is available on CTAN[1]:

CTAN:macros/latex/contrib/oberdiek/chemarr.dtx The source file.

CTAN:macros/latex/contrib/oberdiek/chemarr.pdf Documentation.

Unpacking. The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain-TEX:

```
tex chemarr.dtx
```

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
chemarr.sty           → tex/latex/oberdiek/chemarr.sty
chemarr.pdf           → doc/latex/oberdiek/chemarr.pdf
chemarr-example.tex   → doc/latex/oberdiek/chemarr-example.tex
chemarr.dtx           → source/latex/oberdiek/chemarr.dtx
```

If you have a `docstrip.cfg` that configures and enables docstrip's TDS installing feature, then some files can already be in the right place, see the documentation of docstrip.

Refresh file databases. If your TEX distribution (teTEX, mikTEX, ...) rely on file databases, you must refresh these. For example, teTEX users run `texhash` or `mktexlsr`.

3.1 Some details for the interested

Attached source. The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is pdftk, e.g. unpack the file into the current directory:

```
pdftk chemarr.pdf unpack_files output .
```

Unpacking with LATEX. The `.dtx` chooses its action depending on the format:

plain-TEX: Run docstrip and extract the files.

LATEX: Generate the documentation.

If you insist on using LATEX for docstrip (really, docstrip does not need LATEX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{chemarr.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfLATEX:

```
pdflatex chemarr.dtx
makeindex -s gind.ist chemarr.idx
pdflatex chemarr.dtx
makeindex -s gind.ist chemarr.idx
pdflatex chemarr.dtx
```

[1] ftp://ftp.ctan.org/tex-archive/

4 History

[2001/06/21 v1.0]

- First public version.

[2001/06/22 v1.1]

- Documentation fixes.

[2006/02/20 v1.2]

- DTX framework.
- Example added.

5 Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.