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 **1**
1.1 Example 2

2 Implementation **2**

3 Installation **3**
3.1 Download 3
3.2 Bundle installation 3
3.3 Package installation 3
3.4 Refresh file name databases 4
3.5 Some details for the interested 4

4 Catalogue **4**

5 History **5**
[2001/06/21 v1.0] 5
[2001/06/22 v1.1] 5
[2006/02/20 v1.2] 5
[2016/05/16 v1.3] 5

6 Index **5**

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.

*Please report any issues at https://github.com/ho-tex/oberdiek/issues

1.1 Example

```
⟨*example⟩
\documentclass{article}
\usepackage{chemarr}
\begin{document}
\begin{center}
  left
  \xrightleftharpoons[\text{below}]{\text{above}}
  right
\end{center}
\[
  A
  \xrightleftharpoons[T \geq 400\,\mathrm{K}]{p > 10\,\mathrm{hPa}}
  B
\]
\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}%
  [2016/05/16 v1.3 Arrows for chemical reactions (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

3.1 Download

Package. 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.

Bundle. All the packages of the bundle 'oberdiek' are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

CTAN:install/macros/latex/contrib/oberdiek.tds.zip

TDS refers to the standard "A Directory Structure for TEX Files" (CTAN:tds/tds.pdf). Directories with texmf in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the oberdiek.tds.zip in the TDS tree (also known as texmf tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

Script installation. Check the directory TDS:scripts/oberdiek/ for scripts that need further installation steps. Package attachfile2 comes with the Perl script pdfatfi.pl that should be installed in such a way that it can be called as pdfatfi. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

3.3 Package installation

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

```
tex chemarr.dtx
```

[1] http://ctan.org/pkg/chemarr

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.

3.4 Refresh file name databases

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

3.5 Some details for the interested

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
```

4 Catalogue

The following XML file can be used as source for the TEX Catalogue. The elements caption and description are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is chemarr.xml.

```
54 ⟨*catalogue⟩
55 <?xml version='1.0' encoding='us-ascii'?>
56 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
57 <entry datestamp='$Date$' modifier='$Author$' id='chemarr'>
58   <name>chemarr</name>
59   <caption>Arrows for chemists.</caption>
60   <authorref id='auth:oberdiek'/>
61   <copyright owner='Heiko Oberdiek' year='2001,2006'/>
62   <license type='lppl1.3'/>
63   <version number='1.3'/>
```

```
<description>
  Very often chemists need a longer version of reaction arrows
  (<tt>\rightleftharpoons</tt>) with the possibility to put text
  above and below.  Analogous to <xref refid='amsmath'>amsmath</xref>'s
  <tt>\xrightarrow</tt> and <tt>\xleftarrow</tt> this package
  provides the macro <tt>\xrightleftharpoons</tt>.  The package
  requires amsmath.  To use it, <tt>\usepackage{chemarr}</tt>,
  then <tt>\xrightleftharpoons[below]{above}</tt> .
  <p/>
  The package is part of the <xref refid='oberdiek'>oberdiek</xref>
  bundle.
</description>
<documentation details='Package documentation'
    href='ctan:/macros/latex/contrib/oberdiek/chemarr.pdf'/>
<ctan file='true' path='/macros/latex/contrib/oberdiek/chemarr.dtx'/>
<miktex location='oberdiek'/>
<texlive location='oberdiek'/>
<install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
⟨/catalogue⟩
```

5 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.

[2016/05/16 v1.3]

- Documentation updates.

6 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; plain numbers refer to the code lines where the entry is used.

Symbols

\, ... 12
\[. 10
\] 14

A

\addtolength 29
\arrowfill@ 48, 51

B

\begin 4, 5

C

\CA@temp 27, 29

D

\dimen@ 25, 26, 27, 28, 29, 30
\documentclass 2

E

\end 9, 15
\ensuremath 23
\ext@arrow 34, 40

G

\geq 12

H

\hbox 25, 38

\hphantom 34, 40

L

\leftharpoondown 48
\leftharpoondownfill@ 40, 47

M

\mathrel 24
\mathrm 12

N

\NeedsTeXFormat 18
\newcommand 22, 47, 50

P

\ProvidesPackage 19

R

\raise 25
\raisebox 30, 32
\relbar 48, 51
\RequirePackage 21
\rightharpoonup 25, 51
\rightharpoonupfill@ 34, 50
\rightleftharpoons 28, 66
\rlap 31

S

\setlength 26
\settoheight 25, 28

T

\text 7
\the 27

U

\usepackage 3, 70

X

\xleftarrow 68
\xrightarrow 68
\xrightleftharpoons . *1*, 7, 12, 22, 69, 71