typsium

Typeset chemical formulas and reactions.

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https://github.com/Typsium/typsium

Typsium Community
https://github.com/Typsium

β-吲哚基丙氨酸
https://github.com/tryptophawa

Ants Aare Alamaa
https://github.com/Ants-Aare

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What is Typsium?

Typsium is a tool for writing beautiful chemical equations easily.

This is the manual for Typsiums input syntax and show rules. First, we import **typsium**:

```
#import "@preview/tidy:0.0.0"
```
typ

Chemical Equations

ce

This is the main function of this package. Draws chemical equations and molecules. You can use both strings and content as input. We will try our best to parse it.

```
#ce("H2O") \
#ce[H2O]
```
typ

H_2O
H_2O

Parameters

`ce(formula: string content) -> content`

formula `string` or `content`

The equation or molecule that should be drawn

Simple Equations and Reactions

```
$ce("CO2 + C -> 2CO")$
```
typ

$CO_2 + C \longrightarrow 2CO$

```
$ce("Hg^2+ ->[I-] HgI2 ->[I-] [Hg^^II I4]^2-")$
```
typ

$Hg^{2+} \xrightarrow{I^-} HgI_2 \xrightarrow{I^-} [\overset{+II}{Hg}\ I_4]^{2-}$

```
$C_p [ce("H2O(l)")]$
```
typ

$C_p[H_2O_{(l)}]$

Formulas

```
$ce("H2O")$
```
typ

H_2O

```
$ce("Sb2O3")$
```
typ

Sb_2O_3

Charges

```
$ce("H+")$
```
typ

H^+

```
$ce("CrO4^2-")$
```
typ

CrO_4^{2-}

```
$ce("[AgCl2]-")$
```

$[AgCl_2]^-$

```
$ce("Y^99+")$
```

Y^{99+}

```
$ce("Fe^II Fe^III_2O4")$
```

$Fe^{II+} Fe_2^{III+}O_4$

Oxidation Numbers

```
$ce("Mn^^2 + H2^^1O2^^-1 ->
Mn^^4O2^^-2 + H2^^1O^^-2")$
```

$\overset{+II}{Mn} + \overset{+I\ -I}{H_2O_2} \longrightarrow \overset{+IV\ -II}{Mn\,O_2} + \overset{+I\ -II}{H_2\,O}$

Unpaired Electrons

You can add a radical dot to your molecules like this:

```
$ce("CO^.")$
```

$CO^\bullet$

The appearance of the radical can be further customized by the set-element show rule.

Stoichiometric Numbers

Spaces get moved to before the molecule, since there shouldn't be a space between stochiometric numbers and the molecule.

```
$
  ce("2H2O")\
  ce("2 H2O")\
  ce("$1/2$H2O")\
$
```

$2H_2O$
$2H_2O$
$\frac{1}{2}H_2O$

Isotopes

When writing Isotopes it is important that this specific order is used. Otherwise the notation is similar to counts and charges, just before the Symbol.

```
$ce("^227_90Th+")$
```

$^{227}_{90}Th^+$

Show Rules

set-arrow

Use this to permanently modify what gets drawn on top of all arrows. Don't use this if you are looking to add content on top of just one arrow. Use the squared brackets after the arrow instead.

```
#show: set-arrow(
top:[Hello],
bottom:[World],
)
$ce("A + B -> C")$
```

$A + B \xrightarrow[World]{Hello} C$

Parameters

```
set-arrow(
  top,
  bottom
) -> show rule
```

set-element

Use this to modify how elements are displayed.

Parameters

```
set-element(
  spaced-charge: bool,
  roman-oxidation: bool,
  roman-charge: bool,
  radical-symbol: content,
  negative-symbol: content,
  positive-symbol: content,
  affect-layout: bool
)
```

spaced-charge `bool`

This will offset the charge symbol to the right so that it's not directly above the count. This may be more useful for ACS notation.

```
1 $ce("NH4-")$                          typ
2 #show: set-element(spaced-charge:
  true)
3 $ce("NH4-")$
```

$\mathrm{NH_4^-}$

$\mathrm{NH_4{}^-}$

Default: `false`

roman-oxidation `bool`

This will determine whether oxidation numbers will be shown using roman numerals or arabic numerals.

```
1 $ce("H2^^1O^^-2")$                    typ
2 #show: set-element(roman-oxidation:
  false)
3 $ce("H2^^1O^^-2")$
```

$\mathrm{{}^{+I}{}{}^{-II}H_2O}$

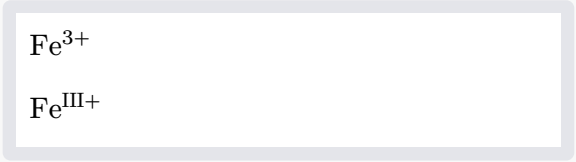
$\mathrm{{}^{+1}{}{}^{-2}H_2O}$

Default: `true`

roman-charge `bool`

This will determine whether charges will be shown using roman numerals or arabic numerals.

```typ
$ce("Fe+3")$
#show: set-element(roman-charge: true)
$ce("Fe^3")$
```

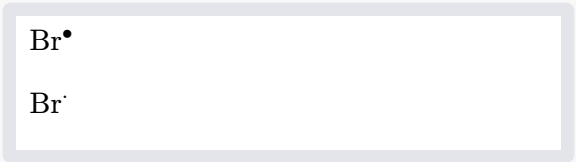


Default: `false`

radical-symbol `content`

Customise the appearance of the radical dot.

```typ
$ce("Br^.")$
#show: set-element(radical-symbol: sym.dot)
$ce("Br^.")$
```

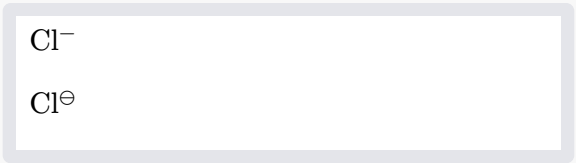


Default: `sym.bullet`

negative-symbol `content`

Customise the appearance of the minus symbol.

```typ
$ce("Cl-")$
#show: set-element(negative-symbol: sym.minus.o)
$ce("Cl-")$
```

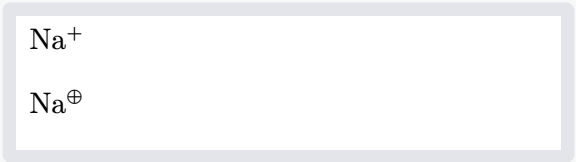


Default: `math.minus`

positive-symbol `content`

Customise the appearance of the plus symbol.

```typ
$ce("Na+")$
#show: set-element(positive-symbol: sym.plus.o)
$ce("Na+")$
```



Default: `math.plus`

affect-layout `bool`

There are some edge cases where elements may be affecting layout. Turn this option off if you are having issues

Default: `true`

set-group

Use this to modify how groups are displayed in your document

```
$ce("(2{[Fe(CN)6]^4+}2-3)")$
#show: set-group(
  grow-brackets:true,
  affect-layout:true,
)
$ce("(2{[Fe(CN)6]^4+}2-3)")$
```

typ

$$(2\{[\mathrm{Fe(CN)_6}]^{4+}\}_{2}^{3-})$$

$$\left(2\left\{[\mathrm{Fe(CN)_6}]^{4+}\right\}_{2}^{3-}\right)$$

Parameters

```
set-group(
  grow-brackets,
  affect-layout
) -> show rule
```

grow-brackets

Brackets will stay the same size by default. Enabling this option will pair Brackets and scale them to wrap around the inner content, dependent on bracket depth.

Default: `false`

affect-layout

Counts and Charges will always stay at the same position by default, Enabling this option will move counts to the bottoms of brackets and move charges to the top of brackets, dependent on bracket depth. this will not look good inside a block paragraph because it affects the layout.

Default: `false`