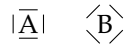
ChemFig

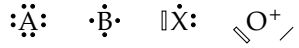
Placer le package chemfig dans le préambule charge aussi le package tikz.
`\chemfig{<par défaut en mode mathématique sans mettre les balises $$>}`

1–Formules de Lewis

`\lewis{0246,A}` `\lewis{1357,B}`



`\lewis{0:2:4:6:,A}` `\lewis{0.2.4.6.,B}` `\lewis{0:2.4|,X}` `\lewis{5|7,O^+}`



2–Types de liaisons

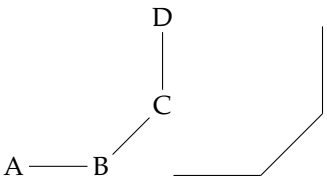
`\chemfig[<option de dessin>][<option sur atome>]{<code molécule>}`

`\chemfig{A-B}`	A—B			`\chemfig[line width=1.5pt]{A-B}`	A—B
`\chemfig{A~B}`	A≡B	`\chemfig{A>B}`	A◥B	`\chemfig[red]{A-B}`	A—B
`\chemfig{A<B}`	A◤B	`\chemfig{A>:B}`	A⁞B	`\chemfig[][red]{A-B}`	A—B
`\chemfig{A<:B}`	A⁞◤B	`\chemfig{A>|B}`	A◥|B	`\chemfig[dashed,thick][red]{A-B}`	A- - - -B
`\chemfig{A<|B}`	A◁|B	`\chemfig*{A-B}`	A—B	`\chemfig[][rotate=30,scale=0.5]{A-B}`	
`\chemfig{A=B}`	A=B	`\chemfig{A=_B}`	A=B	`\chemfig{A=^B}`	A=B

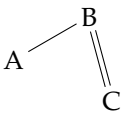
3–Angles

[<angle des liaisons>,<coefficient de longueur>,<numéro de l'atome de départ>,<numéro de l'atome d' arrivée>,<code tikz>]

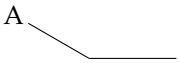
`\chemfig{A-B-[1]C-[2]D}\chemfig{--[1]-[2]}`



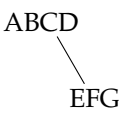
`\chemfig{A-[:30]B=[:-75]C}`



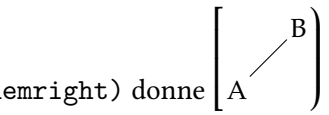
`\chemfig{A-[:-30]-[::+30]}`



`\chemfig{ABCD-[:-60,,3,2]EFG}`

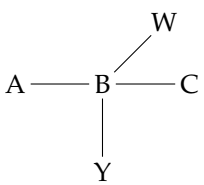


Remarque :`\chemleft[\chemfig{A-[1]B}\chemright)` donne

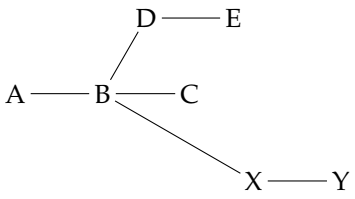


4–Ramifications

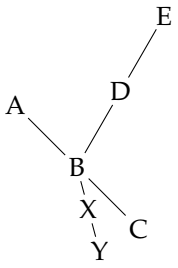
`\chemfig{A-B(-[1]W)(-[6]Y)-C}`



```
\chemfig{A-B(-[:60]D-E)(-[::-30,2]X-Y)-C}
```

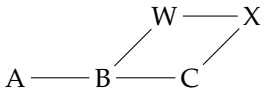



```
\chemfig{[:-45]A-B([:60]-D-E)([::-30,.5]-X-Y)-C}
```

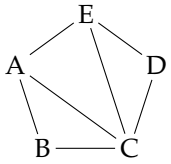


5–Cycles

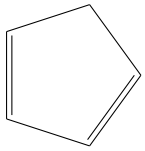
```
\chemfig{A-B(-[1]W-X?)-C?}
```



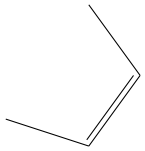

```
\chemfig{A?[a]-[:-72]B-C?[a]?[b]-[:72]D-[:144]E?[a]?[b]}
```



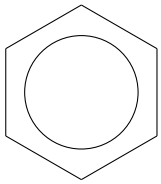

```
\chemfig{*5(-=--=)}
```



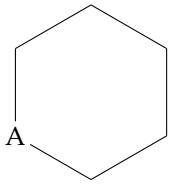
```
\chemfig{*5(-=-)}
```



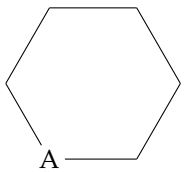
```
\chemfig{**6(------)}
```



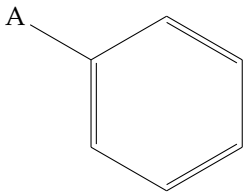
```
\chemfig{A*6(------)}
```



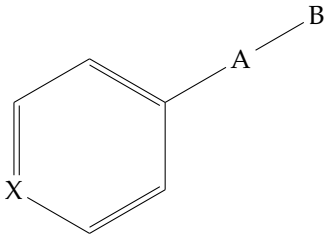

```
\chemfig{[:30]A*6(------)}
```



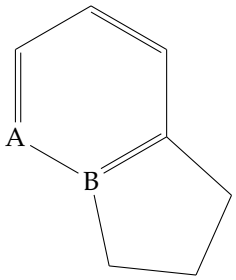

```
\chemfig{A-[:-30]*6(=-=-=-)}
```



```
\chemfig{X*6(-=-(-A-B)=-=-)}
```




```
\chemfig{A*6(-B*5(----)=-=-=)}
```



6–Modifications des distances, des espacements et autres

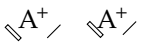
```
\setlewis[<largeur de la lacune |>]{<distance atome déco>}{<longueur du trait>}{<code tikz>}
```

```
\setlewis{4pt}{1.5em}{red}\lewis{26,B}
```



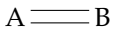
```
\setlewis[0.8ex]{}{}{line width=1pt}\lewis{2|,B}
```

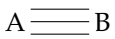


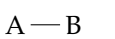
```
\lewis{5|7,A^+} \Lewis[.1]{5|7,A^+}
```


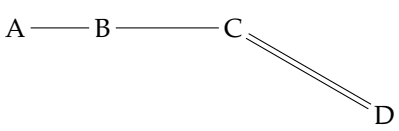

```
\setlewisdist{1ex}\Lewis{1:3:5:7:,X}
```



```
\setdoublesep{1ex}\chemfig{A=B}
```


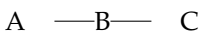

```
\setdoublesep{1ex}\chemfig{A~B}
```



```
\setatomsep{2em}\chemfig{A-B}
```



```
\chemfig{A-B-[,1.5]C=[:-30,2]D}
```


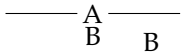

```
\setbondoffset{1em}\chemfig{A-B}
```

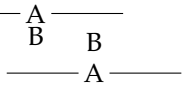


```
\setbondoffset{1em}\chemfig{A-#(,0pt)B-#(0pt)C}
```



```
\setcrambond{5mm}{2mm}{1mm}\chemfig{A>:B}
```



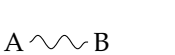
```
\chemfig{-\chembelow{A}{B}-}
```


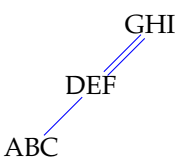

```
\setstacksep{1ex}\chemfig{-\chemabove{A}{B}-}
```


[<angle des liaisons>,<coefficient de longueur>,<numéro de l'atome de départ>,<numéro de l'atome d' arrivée>,<code tikz>]

```
\chemfig{A-[,2,,,red,line width=2pt]B}
```



```
\chemfig{A-[,,,,decorate,decoration=snake]B}
```



```
\chemfig{[1,,2,2,blue]ABC-DEF=GHI}
```


7–Schémas réactionnels

Les schémas réactionnels doivent être placés entre `\schemestart` et `\schemestop`
Remarque : ne pas laisser de lignes blanches dans le code.

7.1–Les flèches

A \arrow B	A → B	A \arrow{->} B	A → B
A \arrow{-/>} B	A ⇢ B	A \arrow{<-} B	A ← B
A \arrow{<->} B	A ↔ B	A \arrow{<=>} B	A ⇌ B
A \arrow{<->>} B	A ⇄ B	A \arrow{<<->} B	A ⇆ B
A \arrow{0} B	A B	A \arrow{-U>[123][456]} B	A 123 456 B

7.2–Modifications des flèches

`\setarrowdefault{angle,coeff,style}`
`\setarrowdefault{}` remet les options par défaut.

```
\setarrowdefault{10,2,red,thick,dashed}
\schemestart A\arrow B\arrow C\schemestop
```

A B C

```
\schemestart[-10,1,blue,dotted] A\arrow B\arrow C\schemestop
```

A B C

```
\schemestart A\arrow[90,,thick]B\arrow[,2]C \arrow[-45,,dashed,red]D \schemestop
```

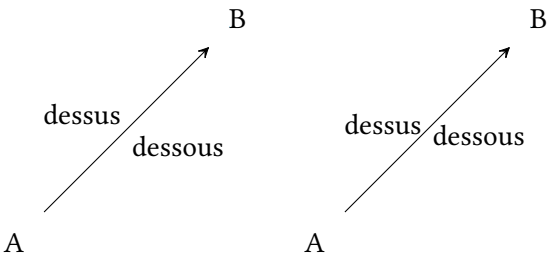
B C D A

```
\schemestart A\arrow{<=>[dessus][dessous][-1cm]}[30,2]B \schemestop
```

B

A dessus dessous

```
\schemestart
A\arrow{->[*{0.south east}dessus][*{0.north west}dessous]}[45,2]B
\schemestop
\schemestart
A\arrow{->[*{0.0}dessus][*{0.180}dessous]}[45,2]B
\schemestop
```

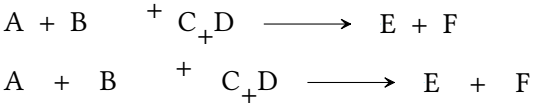


7.3–Le signe +

`{<avant>,<après>,<décalage>}`
On peut utiliser `\setandsign{<avant>,<après>,<décalage>}`

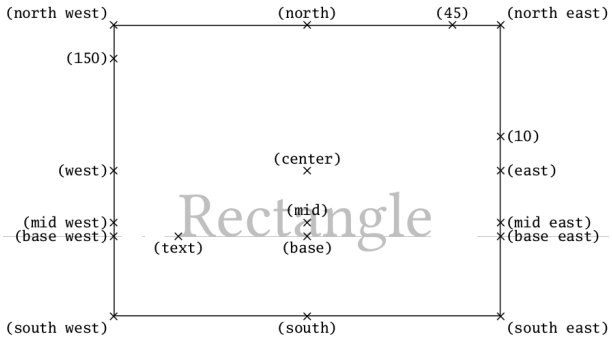
```
\schemestart
A\+B\+{2em,,5pt}C\+{0pt,0pt,-5pt}D\arrow E\+F
\schemestop

\setandsign{1em,1em,0pt}
\schemestart
A\+B\+{2em,,5pt}C\+{0pt,0pt,-5pt}D\arrow E\+F
\schemestop
```

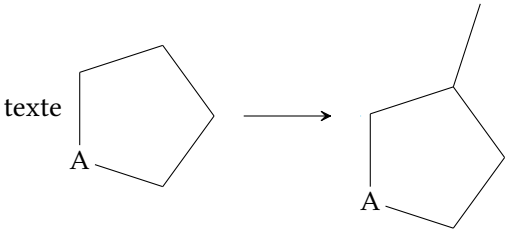


7.4–Positionnements et embranchements

Un schéma réactionnel est constitué de boites successives séparées par des flèches. Donc A + B forme une boite. Chaque boite possède des points de repérage qu'il est possible d'utiliser :

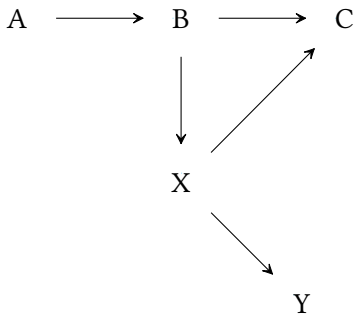



```
texte
\schemestart[][west]
\chemfig{A*5(-----)}
\arrow(.east--.west)
\chemfig{A*5(---(-)--)}
\schemestop
```



Les boites sont nommées par défaut successivement c1, c2…

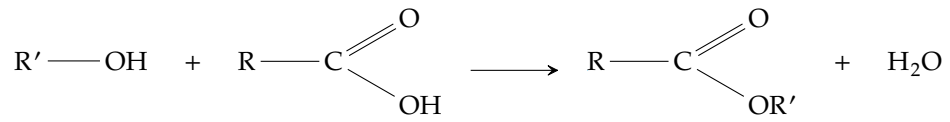
```
\schemestart
A\arrow B\arrow C
\arrow(@c2--x)[-90]X\arrow[-45]Y
\arrow(@x--@c3)
\schemestop
```



Remarque : une astuce pour scinder les boites A + B en plusieurs boites est d'utiliser la flèche invisible `\arrow{0}[,0]`

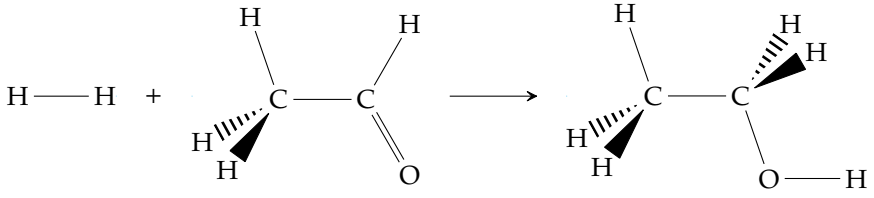
7.5–Placement des noms sous les formules

```
\schemestart
\chemnameinit{\chemfig{R-C(-[:-30]OH)=[:30]O}}
\chemname{\chemfig{R'-OH}}{Alcool}
\+
\chemname{\chemfig{R-C(-[:-30]OH)=[:30]O}}{Acide \\carboxylique}
\arrow(.base east--.base west)
\chemname{\chemfig{R-C(-[:-30]OR')=[:30]O}}{Ester}
\+
\chemname{\chemfig{H_2O}}{Eau}
\schemestop
```



Alcool | Acide carboxylique | Ester | Eau

```
\schemestart
\chemfig{H-H}\arrow{0}[,0pt]\+\arrow{0}[,0pt]
\chemfig{[:-71]H-C(<:[::-80]H)(<[::-55]H)-[::71]C(-[::60]H)=[::-60]O}
\arrow
\chemfig{[:-71]H-C(<:[::-80]H)(<[::-55]H)-[::71]C(<[::30]H)(<:[::55]H)-[::-71]O-[::71]H}
\schemestop
\chemmove{\node[below=2cm]at (c1) {dihydrogène}; }
\chemmove{\node[below=2cm]at (c3) {éthanal}; }
\chemmove{\node[below=2cm]at (c4) {éthanol}; }
```

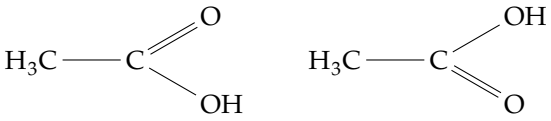


dihydrogène | éthanal | éthanol

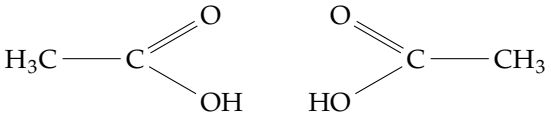
8–Divers

8.1–Molécules symétriques

```
\chemfig{H_3C-C(=[:30]O)-[:-30]OH}
\vflipnext\chemfig{H_3C-C(=[:30]O)-[:-30]OH}
```

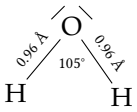


```
\chemfig{H_3C-C(=[:30]O)-[:-30]OH}
\hflipnext\chemfig{H_3C-C(=[:30]O)-[:-30]OH}
```



8.2–Affichage de la distance interatomique et des angles

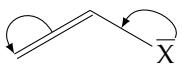
```
\chemfig{[:50]@{a}H-@{b}\lewis{13,O}-[::-105]@{c}H}
\chemmove{\path(a)--node[above,sloped]{\tiny 0.96~\AA}(b);}
\chemmove{\path(b)--node[above,sloped]{\tiny 0.96~\AA}(c);}
\chemmove{\node[below=3mm] at (b){\tiny 105°};}
```



9–Déplacements d'électrons

2 compilations successives sont nécessaires.

```
\chemfig{@{a}=_[@{b}::30]-[@{c}::-60]@{d}\lewis{2,X}}
\chemmove{\draw[-latex](b)..controls++(120:.5) and ++(120:.5)..(a);}
\chemmove{\draw[shorten <=3pt,-latex](d)..controls++(60:.5) and ++(60:.5)..(c);}
```



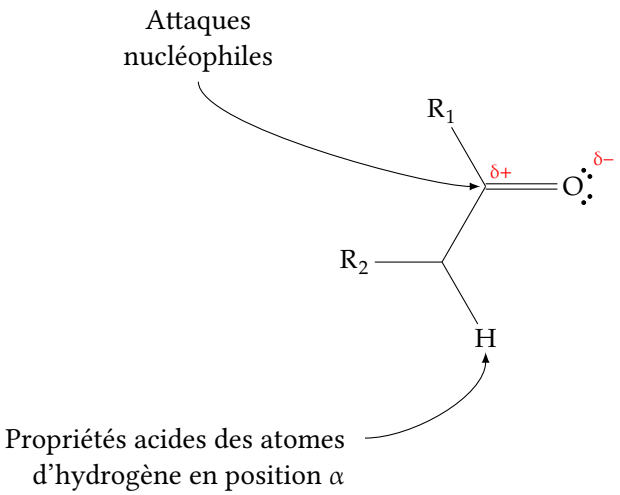
```
\chemfig{@{a}\lewis{1,X}}
\qquad\qquad
\chemfig{@{b}\lewis{2|,X}}
\chemmove[->,shorten <=3pt,shorten >=3pt]{
\draw(a.north east).. controls +(90:1cm) and +(90:1cm).. (b);}
```

```
\hspace{3cm}\tikz[remember picture]\node(n1){\chemname{}{Attaques\\nucléophiles}};

\hspace{5cm}\chemfig{R_2-(-[:-60]@{a}H)-[:60]@{b}(-[:120]R_1)(-[1,0.25,,,draw=none]\scriptstyle\color{
=\lewis{1:7:,O}-[1,0.5,,,draw=none]\scriptstyle\color{red}\delta{-}}

\hspace{3cm}\chemname{}{Propriétés acides des atomes\tikz[remember picture]\node(n2){};
\\d'hydrogène en position $\alpha$}

\chemmove[-latex]{
\draw[shorten >=2pt](n1)..controls+(270:4em)and+(180:2em)..(b);
\draw[shorten >=2pt](n2)..controls+(0:2em)and+(270:2em)..(a);
}
```


Attaques
nucléophiles
R1
δ+
O
δ−
R2
H
Propriétés acides des atomes
d'hydrogène en position α