

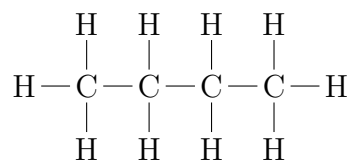
## Contents

<b>1</b>	<b>Alkanes</b>	<b>1</b>
1.1	Butane [A.1]	1
1.2	Cyclohexane [A.2]	1
1.3	Hexane [A.3]	1
1.4	Isobutane [A.4]	1
<b>2</b>	<b>Alcohols</b>	<b>2</b>
2.1	Butanol [B.1]	2
2.2	Cyclohexanol [B.2]	2
2.3	Hexanol [B.3]	2
2.4	Isobutanol [B.4]	2
2.5	Methanol [B.5]	2
2.6	Mannitol [B.6]	2
<b>3</b>	<b>Carboxylic Acids</b>	<b>3</b>
3.1	Acetic Acid [C.1]	3
3.2	Acrylic Acid [C.2]	3
3.3	Benzoic Acid [C.3]	3
3.4	Fumaric Acid [C.4]	3
3.5	Maleic Acid [C.5]	3
3.6	Oleic Acid [C.6]	3
<b>4</b>	<b>Carbohydrates</b>	<b>4</b>
4.1	Fructose [D.1]	4
4.2	Galactose [D.2]	4
4.3	Glucose [D.3]	4
4.4	Mannose [D.4]	5
4.5	Ribose [D.5]	5
4.6	Xylose [D.6]	5
<b>5</b>	<b>Polymers</b>	<b>6</b>
5.1	Poly(Bisphenol A Carbonate) [E.1]	6
5.2	Polyurethane [E.2]	6
<b>6</b>	<b>Mass Spectrometry</b>	<b>7</b>
6.1	1-Propanol [F.1]	7
6.2	Ethylbenzene [F.2]	8

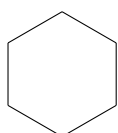
<b>Appendix</b>	<b>9</b>
-----------------	----------

# 1 Alkanes

## 1.1 Butane [A.1]



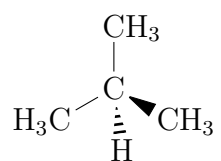
## 1.2 Cyclohexane [A.2]



## 1.3 Hexane [A.3]

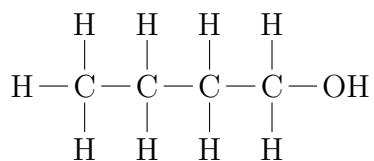


## 1.4 Isobutane [A.4]

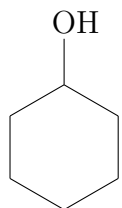


## 2 Alcohols

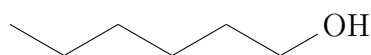
### 2.1 Butanol [B.1]



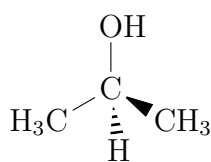
### 2.2 Cyclohexanol [B.2]



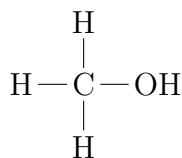
### 2.3 Hexanol [B.3]



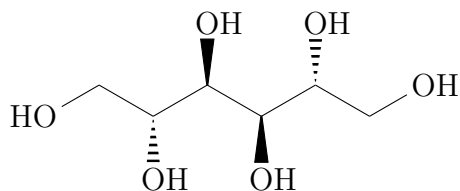
### 2.4 Isobutanol [B.4]



### 2.5 Methanol [B.5]

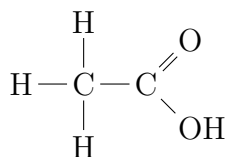


### 2.6 Mannitol [B.6]

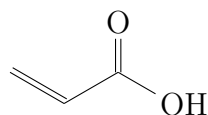


### 3 Carboxylic Acids

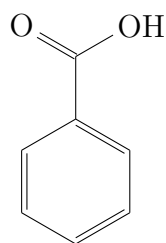
#### 3.1 Acetic Acid [C.1]



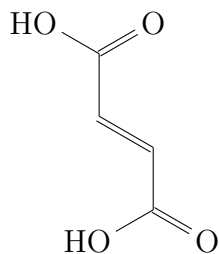
#### 3.2 Acrylic Acid [C.2]



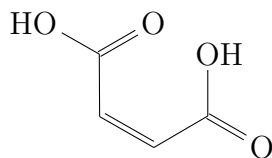
#### 3.3 Benzoic Acid [C.3]



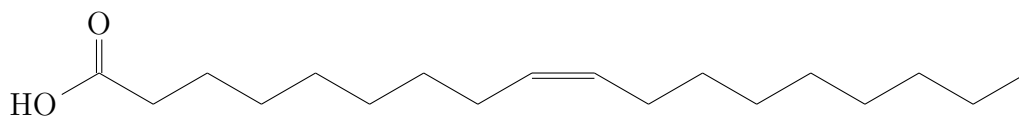
#### 3.4 Fumaric Acid [C.4]



#### 3.5 Maleic Acid [C.5]

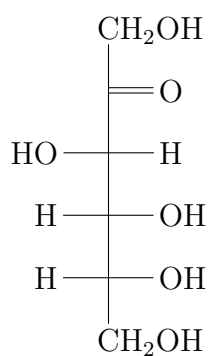


#### 3.6 Oleic Acid [C.6]

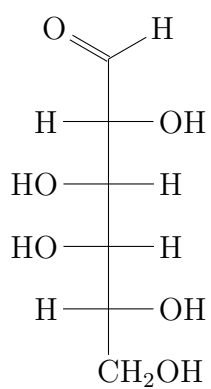


## 4 Carbohydrates

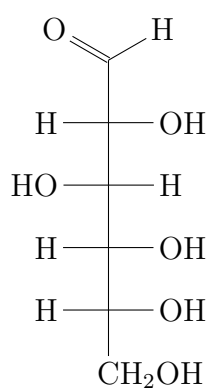
### 4.1 Fructose [D.1]



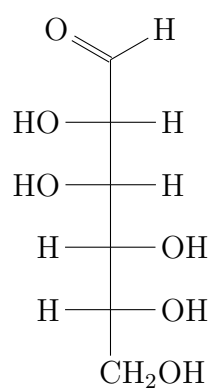
### 4.2 Galactose [D.2]



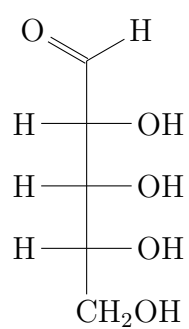
### 4.3 Glucose [D.3]



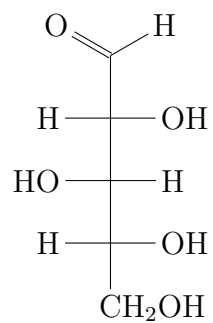
#### 4.4 Mannose [D.4]



#### 4.5 Ribose [D.5]

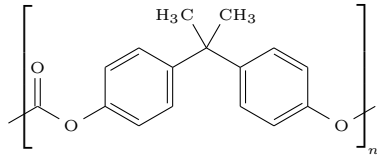


#### 4.6 Xylose [D.6]

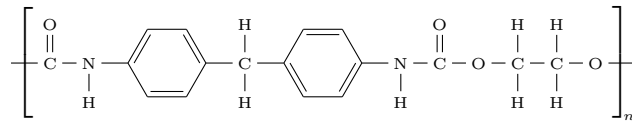


## 5 Polymers

### 5.1 Poly(Bisphenol A Carbonate) [E.1]

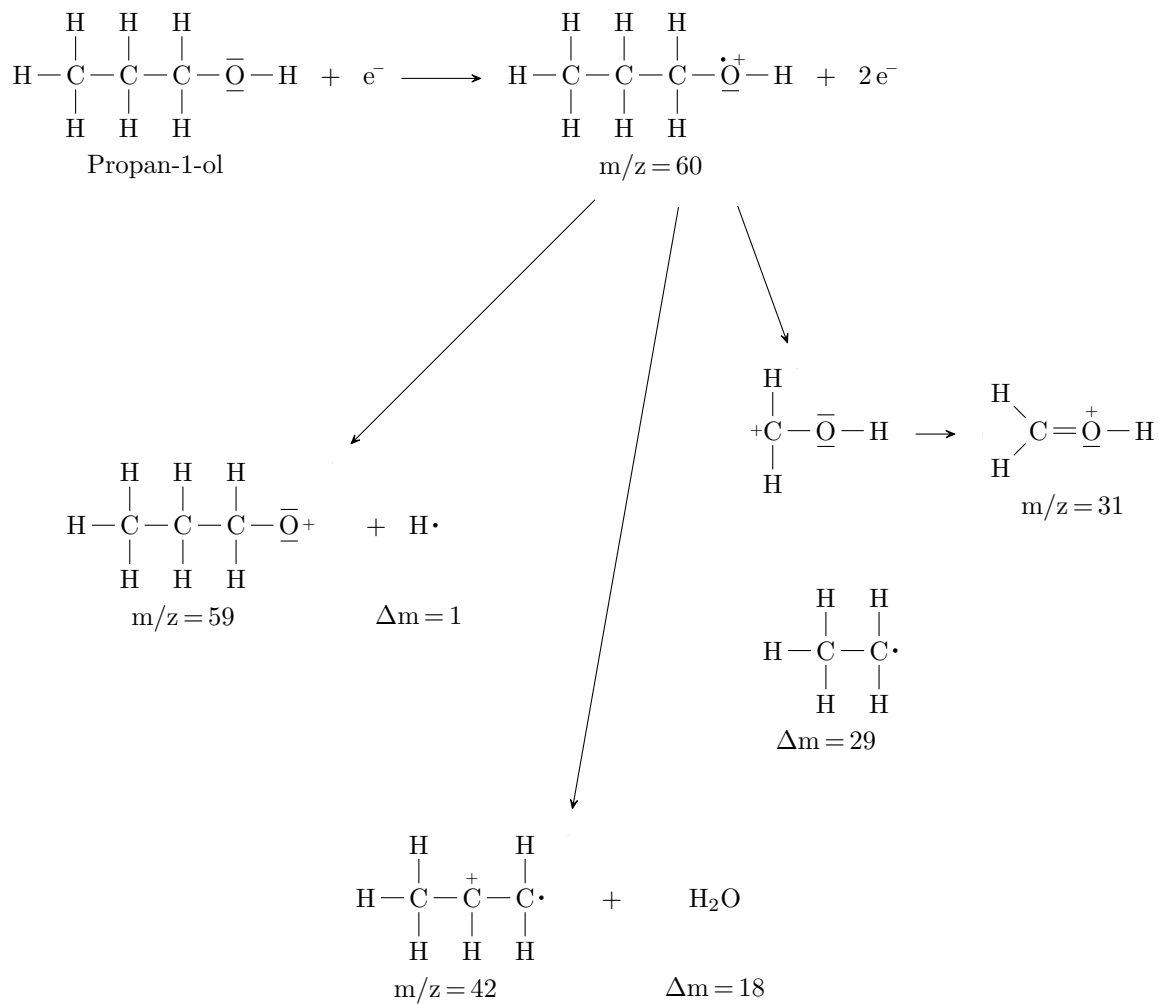


### 5.2 Polyurethane [E.2]



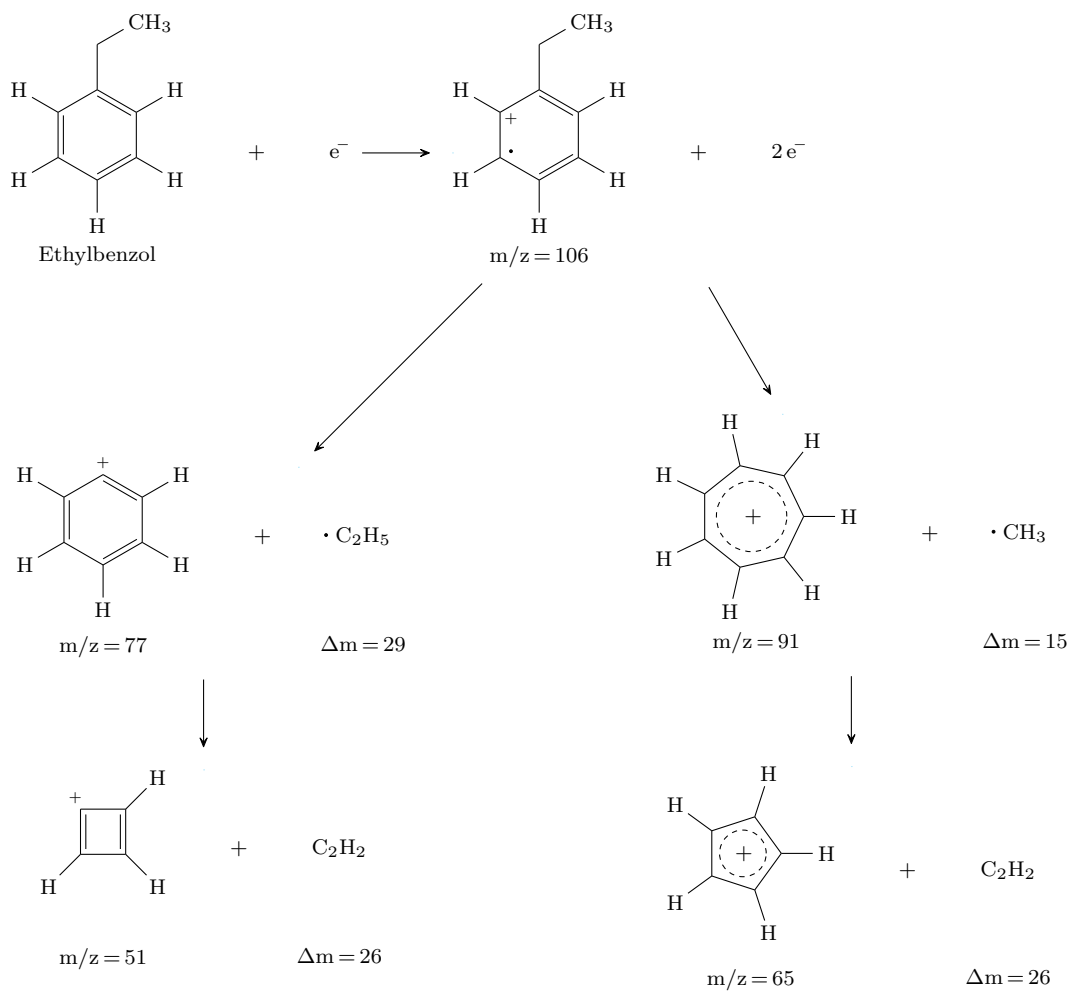
## 6 Mass Spectrometry

### 6.1 1-Propanol [F.1]





## 6.2 Ethylbenzene [F.2]



# Appendix

## Appendix list

<b>A</b>	<b>Alcanes</b>	<b>11</b>
A.1	Butane	11
A.2	Cyclohexane	11
A.3	Hexane	11
A.4	Isobutane	11
<b>B</b>	<b>Alcohols</b>	<b>12</b>
B.1	Butanol	12
B.2	Cyclohexanol	12
B.3	Hexanol	12
B.4	Isobutanol	12
B.5	Methanol	12
B.6	Mannitol	12
<b>C</b>	<b>Carboxylic Acids</b>	<b>13</b>
C.1	Acetic Acid	13
C.2	Acrylic Acid	13
C.3	Benzoic Acid	13
C.4	Fumaric Acid	13
C.5	Maleic Acid	13
C.6	Oleic Acid	13
<b>D</b>	<b>Carbohydrates</b>	<b>14</b>
D.1	Fructose	14
D.2	Galactose	14
D.3	Glucose	14
D.4	Mannose	14
D.5	Ribose	14
D.6	Xylose	14
<b>E</b>	<b>polymers</b>	<b>15</b>
E.1	Poly(Bisphenol A Carbonate)	15
E.2	Polyurethane	15
<b>F</b>	<b>Mass Spectrometry</b>	<b>16</b>
F.1	1-Propanol	16
F.2	Ethylbenzene	17

## A Alkanes

### A.1 Butane

```
\chemfig{H-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-  
C(-[2]H)(-[-2]H)-H}
```

### A.2 Cyclohexane

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

### A.3 Hexane

```
\chemfig[angle increment=30]{-[1]-[1]-[1]-[1]-[1]}
```

### A.4 Isobutane

```
\chemfig[angle increment=30]{H_3C-[1]C(<:[-2.75]H)(-[-3]CH_3)  
<[-1]CH_3}
```

## B Alcohols

### B.1 Butanol

```
\chemfig{H-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-OH}
```

### B.2 Cyclohexanol

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

### B.3 Hexanol

```
\chemfig[angle increment=30]{-[-1]-[1]-[-1]-[1]-[-1](-[1]OH)}
```

### B.4 Isobutanol

```
\chemfig[angle increment=30]{H_3C-[1]C(<:[-2.75]H)(-[3]OH)<[-1]CH_3}
```

### B.5 Methanol

```
\chemfig{H-C(-[2]H)(-[-2]H)-OH}
```

### B.6 Mannitol

```
\chemfig[angle increment=30]{HO-[1]-[-1](<:[-3]OH)-[1](<[3]OH)-[-1](<[-3]OH)-[1](<:[3]OH)-[-1]-[1]OH}
```

## C Carboxylic Acids

### C.1 Acetic Acid

```
\chemfig[] {H-C(-[2]H)(-[-2]H)-C(-[-1]OH)=[1]O}
```

### C.2 Acrylic Acid

```
\chemfig[angle increment=30]{=^[-1]-[1](-[-1]OH)=[3,0.8]O}
```

### C.3 Benzoic Acid

```
\chemfig{*6(---(-([3.333]O)(-[0.666]OH))--)}
```

### C.4 Fumaric Acid

```
\chemfig{HO-[: -30](-[-2](=[[: -30](-[-2](=[[: -30]O)(-[4.666]HO))
))=[:30]O}
```

### C.5 Maleic Acid

```
\chemfig[baseline=(b.base)]{HO-[-0.66](=[0.666]O)(*6(-@{b
})=--(-[2]OH)(=[-0.666]O)))}
```

### C.6 Oleic Acid

```
\chemfig[]
{HO-[0.666](=[2,0.8]O)
  -[-0.666]-[0.666]-[-0.666]-[0.666]-[-0.666]-[0.666]-[-0.666]
-[-0.666]=_
  -[-0.666]-[0.666]-[-0.666]-[0.666]-[-0.666]-[0.666]-[-0.666]
-[-0.666]}
```

## D Carbohydrates

### D.1 Fructose

```
\chemfig{CH_2OH-[-2](=O)-[-2](-[4]HO)(-H)-[-2](-OH)(-[4]H)
-[-2](-OH)(-[4]H)-[-2]CH_2OH}
```

### D.2 Galactose

```
\chemfig{(-[0.666]H)(=[3.333]O)-[-2](-OH)(-[4]H)-[-2](-[4]HO)
(-H)-[-2](-[4]HO)(-[0]H)-[-2](-OH)(-[4]H)-[-2]CH_2OH}
```

### D.3 Glucose

```
\chemfig{(-[0.666]H)(=[3.333]O)-[-2](-OH)(-[4]H)-[-2](-[4]HO)
(-H)-[-2](-OH)(-[4]H)-[-2](-OH)(-[4]H)-[-2]CH_2OH}
```

### D.4 Mannose

```
\chemfig{(-[0.666]H)(=[3.333]O)-[-2](-[4]HO)(-H)-[-2](-[4]HO)
(-H)-[-2](-OH)(-[4]H)-[-2](-OH)(-[4]H)-[-2]CH_2OH}
```

### D.5 Ribose

```
\chemfig{(-[0.666]H)(=[3.333]O)-[-2](-OH)(-[4]H)-[-2](-OH)
(-[4]H)-[-2](-OH)(-[4]H)-[-2]CH_2OH}
```

### D.6 Xylose

```
\chemfig{(-[0.666]H)(=[3.333]O)-[-2](-OH)(-[4]H)-[-2](-[4]HO)
(-[0]H)-[-2](-[0]OH)(-[4]H)-[-2]CH_2OH}
```

## E polymers

### E.1 Poly(Bisphenol A Carbonate)

```
\chemfig
{\phantom{-}\@{op}{-}[0.666](=[2]O)(-[-0.666]O
  (-[0.666]*6(==(-[0.666](-[2.666]H_3C)(-[1.333]CH_3)
  (-[-0.666](*6(==(-[-0.666]O(-[
    0.666]\@{cl}))--)))))--)))))}
\polymerdelim[open xshift = 7.5pt, close xshift = 3.5pt,
  height = 45pt, depth = 10pt, delimiters={[]}, indice =
  \!\!\n]{op}{cl}
```

### E.2 Polyurethane

```
\chemfig[]
{-[@{op,.5}]C(=[2]O)-N(-[-2]H)-*6(==(-C(-*6(==(-N(-[-2]H)-C
  (=[2]O)-O-C(-[2]H)(-[-2]H)-C(-[2]H)(-[-2]H)-O-[@{cl,0.5}])
  ==-))(-[
    2]H)
    (-[-2]H))==)}
\polymerdelim[height = 20pt, depth = 20pt, delimiters
  ={[]}, indice = \!\!\n]{op}{cl}
```



## F Mass Spectrometry

### F.1 1-Propanol

```

\chemestart
\chemname{\chemfig{H-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-\
  charge{90:1pt=\|,-90:1pt=\|}{0}-H}}{Propan-1-ol}
\+
\chemfig{\charge{45=$\scriptscriptstyle{-}}{e}}
\arrow(.mid east--.mid west)
\chemname
{\chemfig{H-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-\charge
  {115:1pt=\.,-90:1pt=\|,60:1pt=$\scriptscriptstyle{+}}{0}-H}}
{m/z\,=\,60}
\+
\chemfig{2\,\charge{45=$\scriptscriptstyle{-}}{e}}
\arrow(@c2--n1)[-70,1.5]
\chemname{\chemfig{\charge{180:1pt=$\scriptscriptstyle{+}}{C}(-[2]H)
  (-[2]H)-\charge{90:1pt=\|,-90:1pt=\|}{0}-H}}{\phantom
\arrow(.mid east--.mid west)[0,0.7]
\chemnameinit{}
\chemname{\chemfig{C(-[3]H)(-[3]H)=\charge{90:2pt=$\scriptscriptstyle{+}}
$, -90:1pt=\|}{0}-H}}{m/z\,=\,31}
\chemnameinit{}
\arrow(@c2--n2)[-100,5]
\chemname{\chemfig{H-C(-[2]H)(-[2]H)-\charge{90:2pt=$\scriptscriptstyle
{+}}{C}(-[2]H)-\charge{0:1pt=\.}{C}(-[2]H)(-[2]H)}}
{m/z\,=\,42}\qquad
\+\qquad
\chemname{\chemfig{H_2O}}{\Delta m\,=\,18}
\chemnameinit{}
\arrow(@c2--n4)[225,3]
\chemname
{\chemfig{H-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-C(-[2]H)(-[2]H)-\charge
  {90:1pt=\|,-90:1pt=\|,0:2pt=$\scriptscriptstyle{+}}{0}}}
{m/z\,=\,59}\qquad
\+
\chemname{\chemfig{\charge{0:1pt=\.}{H}}}{\Delta m\,=\,1}
\arrow(@n1--nn1)[-90,0.45,white]
\chemname{\chemfig{H-C(-[2]H)(-[2]H)-\charge{0:1pt=\.}{C}(-[2]H)(-[2]H)
  }}{\Delta m\,=\,29}
\chemestop

```

## F.2 Ethylbenzene