IUPAC Nomenclature: Machines Do It Better

Historically, the systematic naming of a compound was important in order to uniquely identify it and record relevant information about that compound. Today, computers are able to read and interpret graphical drawings of chemical structures; thus, the skill to name a compound no longer carries the importance that it once did. In the MarvinSketch example below, the program is being used to find the formal name of a tetrapropylene alkylbenzene sulfonate, a compound that once was used in laundry detergent. The IUPAC name is circled in the purple oval. Today, it is far more important that you have the ability to use these tools and interpret their results rather than be an aficionado of IUPAC nomenclature.

The Language of Chemistry

**Hydrocarbons** are compounds composed of only carbon and hydrogen.

**Alkanes** are hydrocarbons containing only **single** bonds.

The straight-chain n-alkanes: **homologs** of the series H-(CH$_2$)$_n$-H whose molecular formula is represented by C$_n$H$_{2n+2}$.

<table>
<thead>
<tr>
<th>carbon number</th>
<th>name</th>
<th>Kekulé structure</th>
<th>condensed structure</th>
<th>ball-and-stick model</th>
</tr>
</thead>
<tbody>
<tr>
<td>C$_1$</td>
<td>methane</td>
<td>H–C–H</td>
<td>CH$_4$</td>
<td><img src="image1.png" alt="Ball-and-stick model" /></td>
</tr>
<tr>
<td>C$_2$</td>
<td>ethane</td>
<td>H–C–C–H</td>
<td>CH$_3$CH$_3$</td>
<td><img src="image2.png" alt="Ball-and-stick model" /></td>
</tr>
</tbody>
</table>
The Normal Alkanes
C₃ and C₄

The skeletal structure shows the carbon-carbon bonds as lines and does not show the carbon-hydrogen bonds.
The Normal Alkanes

$C_5 - C_{12}$

- $C_5$ pentane
- $C_6$ hexane
- $C_7$ heptane
- $C_8$ octane
- $C_9$ nonane
- $C_{10}$ decane
- $C_{11}$ undecane
- $C_{12}$ dodecane