

# Chem!stry

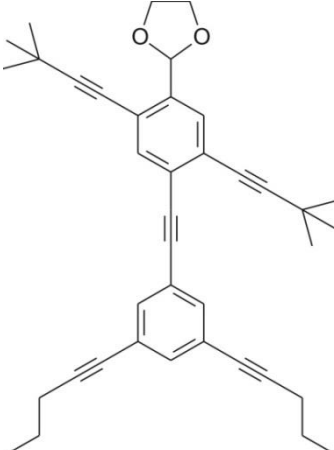
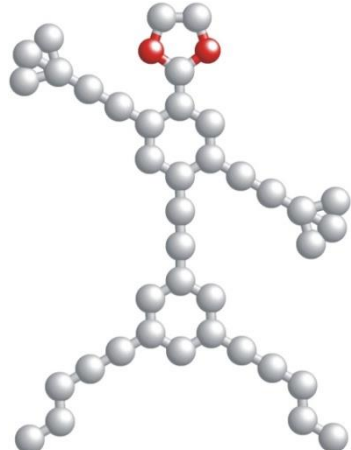
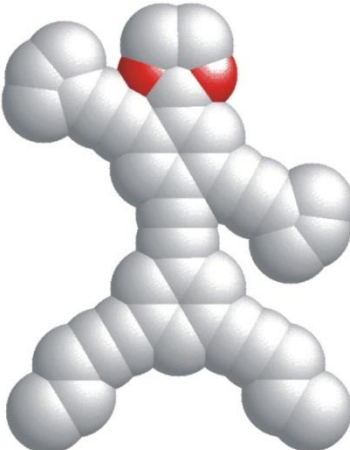
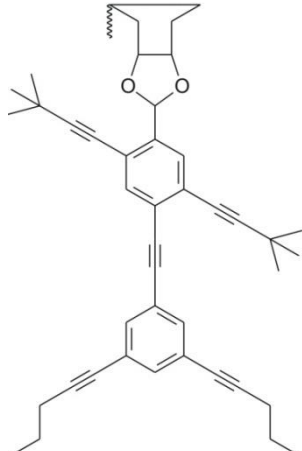
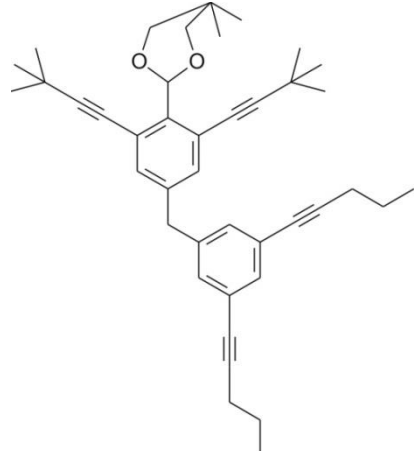
Name: ..... ( )

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## Anthropomorphic Molecules: Macroconcept – Scale

In 2003, a pair of chemists from Rice University in Texas published a research paper in which they describe the synthesis of *anthropomorphic molecules*, i.e. molecules that look like humans. The molecules have been named *NanoPutins* after the little men from Jonathan Swift's book *Gulliver's Travels*. NanoPutins come in many forms. The basic building block is the *NanoKid*, from which other variants can be made, such as the *NanoScholar* and *NanoBalletDancer*.

<p style="text-align: center;"><b>NanoKid</b></p> 	<p style="text-align: center;"><b>NanoKid (ball-and-stick diagram)</b></p> 	<p style="text-align: center;"><b>NanoKid (space-filled diagram)</b></p> 
<p style="text-align: center;"><b>NanoScholar</b></p> 	<p style="text-align: center;"><b>NanoBalletDancer</b></p> 	<p style="text-align: center;"><b>Your Turn to be Creative...</b></p> <ul style="list-style-type: none"> <li>● Identify the functional groups that are present in the <i>NanoKid</i>. Rationalise why these particular functional groups have been used by the researchers.</li> <li>● Identify possible reasons why it is important for chemists to synthesise organic molecules with a specific three-dimensional shape.</li> <li>● Use the space provided on page 2 to design your own anthropomorphic molecule.</li> <li>● Propose a name for your anthropomorphic molecule and state both its chemical and physical properties.               <ul style="list-style-type: none"> <li>● Finally, suggest a use for your anthropomorphic molecule and propose how it could be synthesised in the laboratory from simple starting materials.</li> </ul> </li> </ul>

May, P. W. (2008). *Molecules with silly or unusual names*. London: Imperial College Press.

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Your turn to be creative...

● **For Class Discussion:**

Why is the work of the two Chemists who synthesised the anthropomorphic molecules of value to science?

Notes: .....  
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Why is it important for scientists to be able to control and manipulate matter at an atomic *scale*?

Notes: .....  
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How does the behaviour of matter at an atomic *scale* influence the behaviour of matter at a macroscopic *scale*?

Notes: .....  
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