

Episode 9 - Molecular Architecture

1. What analogy is made at the beginning of the video between the world of building construction and chemistry?
2. Molecules that have the same number and kinds of atoms but differ in the way the atoms are arranged in space are called _____.
3. What is meant by saturated and unsaturated bonds?
4. Which kind of fat is thought to present possible health hazards to humans?
5. Why does the food industry "like" saturated fats?
6. How are saturated fats produced from unsaturated fats?
7. What two categories of geometric isomers were mentioned in the video?
8. What is meant if two molecules are said to be chiral?
9. What are the two main categories of optical isomers?
10. Briefly describe the results of the fermentation demonstration.
11. What happens to the optical activity of an amino acid in protein as it decomposes?
12. How is the process described in Question 11 used to determine the age of objects?

Answer Key

1. What analogy is made at the beginning of the video between the world of building construction and chemistry?

Both buildings and compounds are constructed from a relatively small number of building blocks.

2. Molecules that have the same number and kinds of atoms but differ in the way the atoms are arranged in space are called isomers.

3. What is meant by saturated and unsaturated bonds?

Saturated compounds hold all the hydrogen they can i.e. single bonds. Unsaturated bonds could hold more hydrogen; they have double bonds.

4. Which kind of fat is thought to present possible health hazards to humans?

Saturated fat.

5. Why does the food industry "like" saturated fats?

They are solids at room temperature, have longer shelf lives, and have higher cooking temperatures.

6. How are saturated fats produced from unsaturated fats?

Hydrogen is passed through the unsaturated fat in the presence of a catalyst.

7. What two categories of geometric isomers were mentioned in the video?

cis and trans isomers

8. What is meant if two molecules are said to be chiral?

The two molecules can not be superimposed. Solutions of the two isomers rotate light in opposite directions.

9. What are the two main categories of optical isomers?

D (dextro - right) and L (levo - left).

10. Briefly describe the results of the fermentation demonstration.

Only the D form of the sugar was acted upon by the yeast to bring about fermentation.

11. What happens to the optical activity of an amino acids in protein as it decomposes?

One form (D or L) is converted to the other (racemization).

12. How is the process described in Question 11 used to determine the age of objects?

The less the optical activity the older the object.