

Episode 20 - On the Surface

1. Give some examples of interfaces described at the beginning of the video.
2. What is special about the atoms or molecules at an interface?
3. What causes surface tension?
4. What is the name for a chemical that can reduce surface tension?
5. How does a surfactant like a detergent remove soil from clothing?
6. Adhesives form bonds at interfaces. What are some problems in forming an adhesive like "Scotch Tape"?
7. What is thought to happen at the surface of a catalyst?
8. What are some economic impacts of catalysts?
9. Why is surface area important?
10. How are catalysts like zeolites or molecular sieves different from other catalysts?

Answer Key

1. Give some examples of interfaces described at the beginning of the video.

The areas where gases and liquids, gases and solids, liquids and solids, or two immiscible liquids meet.

2. What is special about the atoms or molecules at an interface?

They are only bonded to neighbors beside or below them.

3. What causes surface tension?

Molecules at the surface are attracted to neighbors next to and below them resulting in a flexible skin.

4. What is the name for a chemical that can reduce surface tension?

Surfactant

5. How does a surfactant like a detergent remove soil from clothing?

It contains both polar and nonpolar portions in its structure and thus can be attracted to both the soil and the water.

6. Adhesives form bonds at interfaces. What are some problems in forming an adhesive like "Scotch Tape"?

It must form reasonably strong bonds to other materials but should not strongly bond to itself. It should not degrade while sitting on the store shelf.

7. What is thought to happen at the surface of a catalyst?

Old bonds are broken and new bonds are formed.

8. What are some economic impacts of catalysts?

More product may be produced in the same amount of time. Materials once thought to be waste products may be turned into marketable materials.

9. Why is surface area important?

The more surface exposed the greater the chance that reaction will occur.

10. How are catalysts like zeolites or molecular sieves different from other catalysts?

They have "hole" which select or screen molecules that are allowed to pass through and later react.