Practical Application of Intermolecular Forces

A Study of Adhesives

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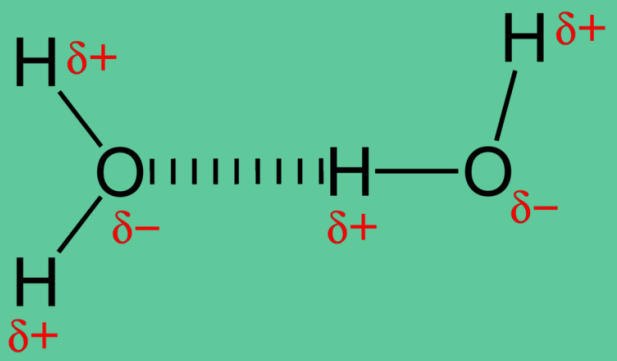
Intermolecular Forces

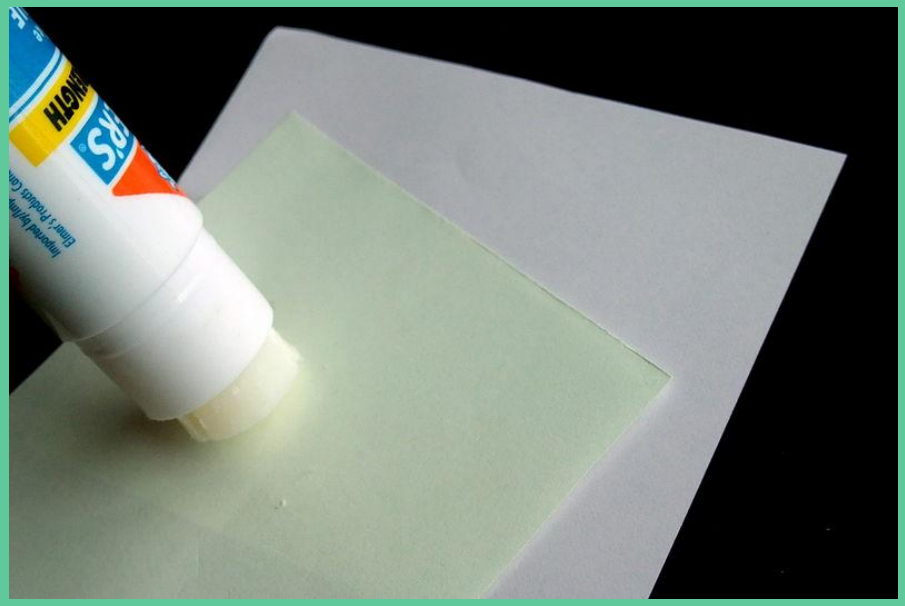
- Forces between molecules
  - Permanent dipoles
  - Induced dipoles
  - van der Waals or London Dispersion forces
  - Hydrogen bonds



Applications

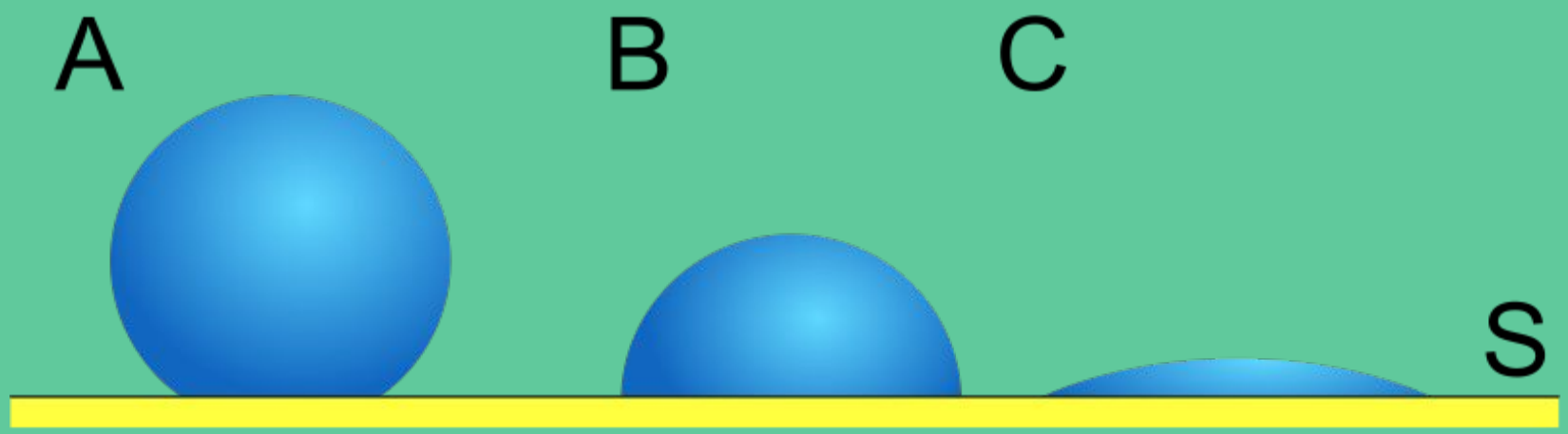
- Determines various physical properties of a molecular solid
  - Melting point
  - Boiling point
  - Vapor pressure
- Adhesive force of glue

An adhesive is a substance that sticks to the surface of an object such that two surfaces become bonded.



The adhesive will “wet” or cover the substrate, when the Intermolecular forces between the glue and the substrate are stronger than the Intermolecular forces between the glue and glue.

For an adhesive to wet a surface, the adhesive should have a lower surface tension, than the solid's surface energy (or critical surface tension),



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Adhesive Curing

Once the adhesive is applied to the substrate, it will begin to cure, or form a permanent bond

Different Adhesives have different mechanisms in which the curing takes place

So HOW do glues compare?

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In the following lab you will investigate the differences in the adhesive ability of some different types of glues