

Name _____

The Magical World of Van der Waals Forces

Open-Ended Response Answer Key

1. In the container with strong Van der Waals forces, the substance is likely to have higher boiling and melting points compared to the substance with weak forces. This is because stronger forces require more energy to break, making it harder for the molecules to change from a solid or liquid to a gas.
2. Adhesion and cohesion are important properties of water due to Van der Waals forces because they allow water to stick to surfaces (adhesion) and form droplets (cohesion). These properties are essential for processes like capillary action in plants and the functioning of our circulatory system.
3. Van der Waals forces can be attractive when molecules are close together but become repulsive when they get too close due to electron-electron repulsion. For example, in a gas, molecules are attracted to each other at a distance but repel when they get very close, preventing them from merging. This is why gases can be compressed.
4. Understanding Van der Waals forces is beneficial in the design of adhesives, such as those used in tape or sticky notes. By optimizing the forces between molecules in the adhesive and the surface, engineers can create products that stick well but can also be easily removed when needed.

