

9.4 Hematite Magnets and Polar Bonds

Subjects: Molecular structure, polar bonds

Description: Hematite magnets are used to demonstrate the attraction between polar molecules.

Materials (Shared bin with 9.3)

Hematite magnets (amorphous magnet stones or “Shock Wave” magnets)

Procedure:

1. Throw magnets up in the air and arcing towards each other so that they stick together in mid-air, to demonstrate the attraction of polar molecules (This may take some practice prior to class).

Discussion:

In a polar molecular, electron density accumulates at one side of the molecule, giving it a partial negative charge while the other side has a partial positive charge. The identity of the terminal atoms, polarity of individual bonds, and the symmetry of the molecule help to determine the molecular polarity. Two molecules with permanent dipole moments can be attracted to each other. This is an intermolecular force known as dipole-dipole interactions. The partial negative charge on one of the molecules is attracted to the partial positive charge on the other molecular (Chapter 12). Another force, ion-dipole interactions involves the forces between a positive or negative ion and polar molecules (i.e NaCl in water). This demo qualitatively illustrates the attraction of polar molecules.

Safety:

None

Disposal:

None

References:

1. J. Kotz, P. Treichel, J. Kotz; Chemicals & Chemical Reactivity; 7th Ed. Teachers Ed; Thomson Brooks/Cole; 2009; p. 557-560
2. Prof Botch