



## Atomic Structure and Bonding

### Set 7: Uses, Properties and Structure

1. When looking after an invalid in the home, having a plastic chair in the shower recess makes bathing safer. The patient can sit and therefore does not risk falling over. The choice of chair is critical; it cannot have plastic legs. It requires metal legs, as the plastic legs can get brittle over time and collapse. Using your understanding of the structure of substances explain why this is correct. Make sure you comment on the structure and properties of the metal as well as the plastic.
2. Explain the following:
  - (a) Electricians' screwdrivers have plastic handles.
  - (b) Saucepans have plastic or wooden handles.
  - (c) Plastic microwave dishes can't be used in a conventional oven.
  - (d) Pencils used to etch glass have diamond tips.
  - (e) Lead is used to make sinkers for fishing.
3. Lead is used to make leadlight windows. What properties of the metal make it suitable for this purpose?
4. Describe the property of gold that makes it suitable for the following uses:
  - Jewellery
  - Coinage
  - Electronic circuits
  - Shields in spacecrafts
  - Dental work
5. Classify the following as either metallic, ionic, covalent molecular or covalent network substances.
  - (a) water,  $\text{H}_2\text{O}$
  - (b) copper oxide,  $\text{CuO}$
  - (c) methane,  $\text{CH}_4$
  - (d) rutile, ( $\text{TiO}_2$ )
  - (e) Iron, ( $\text{Fe}$ )
  - (f) silicone dioxide, ( $\text{SiO}_2$ )
6. Which of the substances listed in question 5 would conduct an electric current as a (a) solid  
(b) melt  
Explain your choices.