Exercises 7

1 What classical phase states do you know? What are their specific characteristics?

2 How do intermolecular interactions affect the macroscopic properties of a material? Name an example.

3 Give an example for a physical property which can be related to the position of chemical elements in the periodic table.

4 Which statement(s) regarding the phase state of a material at room temperature is correct, which is (are) false?*

a) the phase state of a material depends on its density
b) the phase state of a material depends on its molecular mass (weight)
c) the phase state of a material depends on the type of intermolecular interactions
d) materials containing metals are always solid at room temperature
e) materials containing hydrogen are never solid at room temperature
f) the phase state of a material primarily depends on its moisture content
g) the phase state of a material can not be predicted from its molecular structure

5 Which of the following measures are suitable in order to change a phase state of a material from liquid to solid at room temperature?*

a) increase the molecular mass
b) decrease the order of the molecular packing
c) increase the number of intermolecular interactions
d) apply mechanical forces to the material

6 Name the most important molecular interactions and compare their influence on the phase state of the macroscopic system. Which interaction is generally the strongest, which is the weakest in direct comparison?

* One or several answers may be correct. Please indicate appropriately by repeating the assignments a), b), c), … followed by the statements "right" or "wrong" on your answer sheet.