Practice

Reading time: 5 minutes

Weird States of Matter

There are three states of matter that people commonly encounter in their everyday lives. The air we breathe is a gas, where the particles are spaced relatively far apart. In liquids like water, particles are much more tightly packed, but are still able to move and flow past one another. Thus, liquids assume the shape of their container. Wood, metal and brick are all solids where the atoms are very close together such that they retain their own shape and volume.

As nature reveals more of itself to people, more states of matter are observed. Many of these states exist in such extreme conditions that they can be seen only in the laboratory or from vast cosmic distances. Plasma is a readily visible state of matter. In the first three states of matter, electrons, or negatively charged particles, are bound up with the positively charged nucleus. In plasmas, these electrons are stripped away and mingle about freely with other particles. All visible stars are made of plasma, which is continuously excreted out into space. One can also see plasmas in lit neon signs and fluorescent light bulbs.

Another example of an extreme state of matter is a superfluid. One such superfluid is helium, which is normally a gas. At temperatures close to absolute zero, the lowest temperature possible, helium turns into a superfluid and exhibits very unusual properties. In such a state, it has zero viscosity (no fluid friction), which means that up to a certain point, the superfluid will remain absolutely still within a rotating container. Superfluids also exhibit infinite thermal conductivity, meaning that any change in temperature in one part of the superfluid will instantly spread out to the whole volume.

(283 words)

Questions 1–6

Complete the summary below. Choose your answers from the box at the bottom of the page and write them in boxes 1–6 on your answer sheet.

NB There are more words than spaces, so you will not use them all.
You may use any of the words more than once.

EXTREME MATTER

We encounter *(Example)* states of matter every day. *Answer:* ***different***

Those states of matter we **(1)** with include: oxygen molecules, which are part of the air we breathe; **(2)** that we drink in liquid form; and solids like the food we eat and like other objects we use in life. Other extreme forms of matter also **(3)** . Plasmas are a kind of gaseous soup where the **(4)** and nuclei move about individually. **(5)** are a very strange kind of liquid. Their **(6)** are still being studied.

Word List

carbon dioxide	water	orbit
interact	absolute zero	container
unusual	dust	properties
superfluids	visuals	stars
infinite	exist	electrons
different		

Answers.

1. Interact

2. Water

3. Exist

4. Electrons

5. Superfluids

6. Properties