Water

WATER IS AN INTERESTING substance with some very interesting properties. I think God made water special because without these properties, life on earth would end.

Everything in the universe is made of tiny bits of matter called atoms. Most types of atoms can combine to make larger bits called molecules, which join together to create different substances. Atoms and molecules are always vibrating.

Now think about the spacing between molecules: the more they vibrate, the more space they'll need. In my classroom I describe this as an awkward dance party. If a bunch of people squeeze together as tight as they can, they can get pretty close. But when you start the music and they begin to dance, they'll need to spread out a bit. This is the way heat works. We measure heat (vibration) with a tool called a thermometer. The more the liquid in the thermometer vibrates, the more it spreads out, and it rises up the tube. The faster a substance's molecules vibrate, the "hotter" they are.

If you think about it, this explains why things can change from a solid to a liquid to a gas and back again. When things get hotter, molecular vibration becomes stronger than the force that links them together, so with a high enough temperature a solid will melt into a liquid, and when it gets even hotter it will turn into a gas. But as things cool, molecules get closer to each other, becoming denser, or more closely packed together in a given space, so a gas will turn back into a liquid when cool enough and freeze into a solid when even cooler.

Because a substance's density changes with its temperature, if you put a block of solid lead, for example, into a vat of molten lead, the solid will sink in the less-dense liquid. This is true for nearly every kind of molecule.

Except water. God made water with a unique structure. Water forms a crystal pattern when it locks into solid form, and that takes up more space than liquid water; it is less dense. This is why ice floats.

Imagine if water sank when it froze. Lakes in northern climates would slowly turn solid from the bottom up in winter. All fish and creatures larger than bacteria would likely die. Water also has a high heat capacity, which means it takes a lot of energy to change its temperature, so not only would northern lakes freeze upward; they would probably never melt all the way to the bottom. Life on earth would end.

But God designed water to be special, to have a different pattern when it cools enough so that its solid form rises to the top. God also designed us to be special, not only as humans, but also as Christians. We can point the way to God by rising above a sinful world.

Be like ice: rise to the top!

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