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Short Commentary

Physics of Nature: In Fog And Clouds; In Lightning and Thunder

Niels Bohr's laws, magnetic field of an atom, gaseous state, Avogadro, Ampère

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Abstract

It is the most elementary and important phenomenon that affects us and for which we still lack any physical explanation. For the average person, the current explanation that precipitation consists of water that was stored as vapour in the clouds and which, after condensing, forms individual raindrops may suffice. The central question is why the rain in the clouds (H_4O_2) is lighter than the water of which it is composed (H_2O).

The apparent contradiction is repeated for all gaseous substances. In this case, Niels Bohr simply ignored the laws of electrical engineering and declared them to be invalid in the microcosm. He was awarded the Nobel Prize for this act and misled whole crowds of scientists. For 100 years, people have blindly believed in "Bohr's laws".

However, if you go back 200 years, you get an other view of the gaseous state of matter. In 1811, the Italian Avogadro published his view of the gas model. He started from Gay-Lussac's law and found the same number of particles for the same volume at the same pressure and temperature. This was useful for determining the size of the gas particles.

This prompted the French scholar Ampère to write a letter to Count Berthollet and publish it immediately (1814) in the Annals of chemisty [1]. In it, he argued that a gas particle must consist of at least 8 particles. He thus laid the foundation for the quantum number n = 2, the smallest common gas volume.

The Magnetic Field of an Atom

Of course, at that time, everyone defined for themselves what they wanted to understand as a particle or what they wanted to regard as a component of an atom or a molecule. Today, the 8 particles are recognized as shell electrons that form an electron ring around the nucleus.

The electric field ensures order among the electrons in the shell. These in turn rotate around their own axis under the electron spin (v). As a result, they form a north pole in one direction and a south pole in the opposite direction. The spheres thus become magnetic dipoles.

The north pole looks for a south pole to connect to and vice versa. In other words, each dipole tries to compensate for its charge. The particle therefore no longer exerts a magnetic force on the outside and behaves as if it were non-magnetic.

In any case, all those who believe Bohr's "laws" and postulates do not believe that gas has a magnetic field. In return, they accept that the important correlations of electrical engineering lose their validity.

In fact, the magnetic field ensures order among the numerous swirling shell electrons; for example, for exactly 8 electrons, which are characteristic of gas, as Ampere established 200 years ago on the basis of simple observations [1].

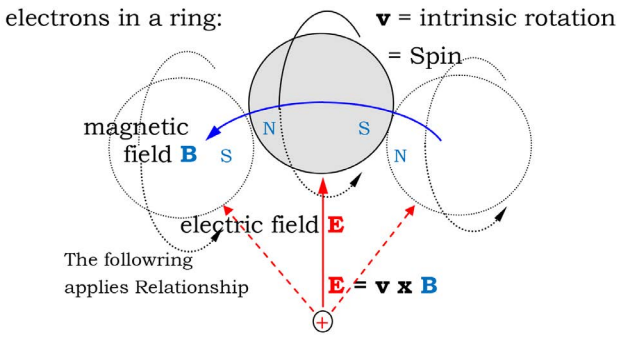


Figure1: Electrons in the atomic shell of a gas.

For the quantum number n = 2, the $2.n^2 = 8$ electrons form the magnetically tightly coupled ring. However, this requires a temperature of 100° Celsius. Due to the increased temperature, the electrons in the shell are lifted by their inertia to the outer orbit.

There they are held magnetically by other shell electrons and effectively prevented from falling back into the nucleus ($d_2 = 424$ pm).

At the same time, a state of levitation is achieved, as each individual particle has increased enormously in volume with the same weight, i.e. with reduced density. This means that 1 liter of water, which is converted into gas at 100°C, increases its volume to 1672 liters.

Gaseous Water

The water molecule has 10 electrons, 8 of which form a ring from approx. 100°C upwards. The 2 remaining electrons form the innermost shell in the oxygen molecule.

The two hydrogen molecules retain their dipole character when they become gaseous. At the same time, the other ring electrons exert a magnetic force which holds them in the ring.

If the temperature falls only slightly below 100°C, the water (H_2O) returns to its original state and it rains.

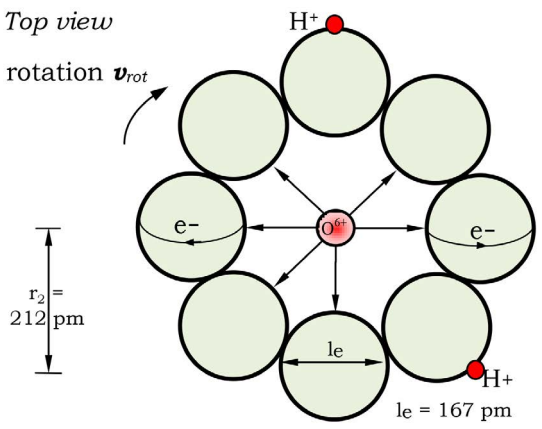


Figure 2: Water vapor = sixfold ionized core with 2 hydrogen dipoles give 8 electrons in the ring, which hold magnetically so as not to fall into the nucleus. (H^+ are drawn out of scale.)

This does not yet explain the fogging of the mirror under a shower (at approx. 30°Celsius). The formation of fog could also be explained in this way.

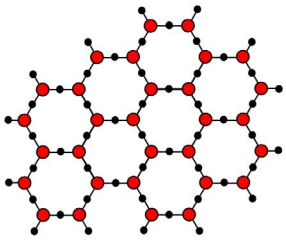
Cold Water (4°C to 40°C)

Cold water is assumed to be no more than 40°C, at which the water colloids decompose, and no less than 4°C, at which water freezes to ice.

In this range, between 4° and 40°Cesius, stacked water dipoles can be seen as structure-creating colloids. They arrange themselves in a circle to form a layer of water. This molecular structure is known as polywater and is under discussion [2].

figure 3: *the molecular structure of polywater according to Lippincott et al. Science 1969 [2]*

● *oxygen molecules*
• *hydrogen atoms*
the distance O — O is approx.230 pm.



Further layers can form above and below this. The layers cannot hold together electrostatically, as some people mistakenly imagine [3]. The electric field is comparatively weak compared to the dominant magnetic field, which is perpendicular to it and also points to the neighbouring layer (e.g. from oxygen to oxygen).

These can be magnetically attracted from one by the other layer, even with they have the same electrical charge. On the one hand, this explains why water has the highest density at 4°C, and on the other hand, it explains why fusion of water with water is possible.

The Fusion Process in Water

Water exhibits the usual behaviour: its density increases the colder the water is, or in other words, the smaller the thermal movement is. As a result, the molecules come closer together and do not repel each other. The magnetic force helps (see Picture 4).

Below 4°C, however, water changes its structure and density. Its volume increases when it freezes into ice.

In molecular terms, the reduced density can be explained by hydrogen nuclei that slide between the layers of polywater, between two oxygen molecules. This is due to the magnetic field that holds the layers together. At the freezing point, however, it loses its effect, especially the magnetic attraction, because the movement comes to a standstill.

Let's stay with liquid water between 4° and approx. 40°C. Here the magnetic field dominates, which is perpendicular to the electric field. The layer above or below has field pointers pointing in the same direction, which means that the layers are always stacked on top of each other.

For example, if an oxygen atom has its north pole at the top, it sees the neighbouring atom from below. It sees its south pole and feels magnetically attracted.

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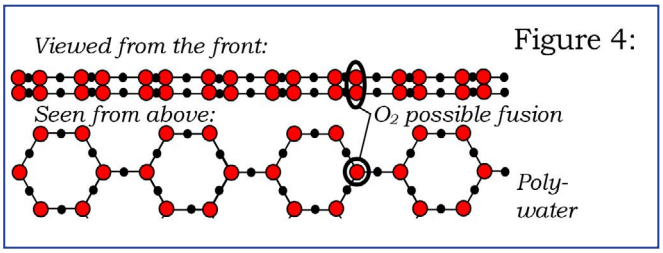

Figure 4:

Due to the magnetic attraction, but also due to the open structure, the nucleus of one comes very close to the nucleus of another, which is why fusion can occur spontaneously (Picture 4).

An O_2 is formed as a new nucleus. Each O remains connected to the H_2, so that the result is H_4O_2. They always occur in gaseous form (n = 2).

Fog and Clouds

An extensive and cold sea surface fulfils the prerequisite for fusion. The gas rises as fog and then remains relatively stable as clouds. They consist mainly of H_4O_2.

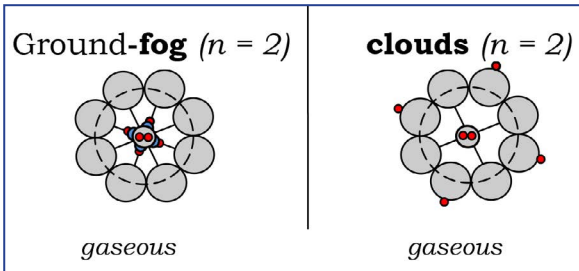

figure 5: the development of a fog in clouds in the gaseous state as H_4O_2

Fog is almost identical to the aerosols of clouds. While the four positrons initially take up space on the inside, they migrate one by one to the outside, thereby enlarging the ring and reducing the density.

During the conversion, the fog rises and the clouds can collect at an altitude of around 1000 metres.

Let us look at the stations that two hydrogen dipols can occupy as stable forms:

As already mentioned, they are very stable as clouds. However, if they are disturbed, e.g. compressed, they break down into water and it rains.

Lightning and Thunder

Figure 6 shows another gaseous and explosive structure that occurs at the quantum number n = 3. This requires $2.n^2 = 18$ electrons: which H_4O_2 is also able to provide. One pair of electrons is left over, which binds the two oxygen molecules together (Figure 6). It flashes and thunders, they say.

The flash is the visual sign, the thunder the acoustic sign that the volume is increasing. However, this requires a high voltage, which does not occur in the clouds.

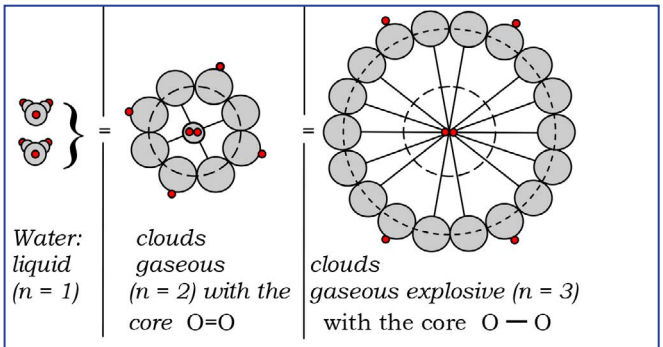

Figure 6: The development from liquid water to explosive gas as H_4O_2 including 4 hydrogen dipoles

The flash must be ignited with ozone. With ozone, three oxygen atoms must fuse. They have already reached their critical temperature at -12°Celsius, at which they change their state from n = 2 to n = 3 [4]. At such temperatures, as occur in clouds, a pre-discharge can take place (also with ozone-containing water: H_6O_3).

The increase in volume leads to a rise in temperature, which is necessary for the gaseous explosive form. Now, (at more than T_{Krit} = 374°C), the actual flash can occur (to H_4O_2 in n = 3).

This is always associated with some rain when the H_4O_2 gas decomposes into $2.H_2O$ (q.e.d.).

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