

Observations of the cluster of water at vicinity of ice in carbonated water

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We can observe many fine particles in the carbonated water as shown in the photograph (Phot.1). The spiral structure of water is based on planar interconnections with the vertical cohesion. It will form a sphere. Particles made of carbonated water are observed on the ice of the central, and cluster of water with similar size are observed on the surface of the liquid. The cluster of water possessing with spiral structure is able to play an important role for the chemical evolution. The surface of sea water is the candidate of early stage on the chemical evolution.

The carbon dioxide is dissolved in the water at the lower temperature. The carbon dioxide in the early atmosphere was dissolved in the early sea. The bubbles were produced by the carbon dioxide. The floating substances are collided with molecules from the atmosphere. Neighboring atoms can be exchanged by the thermal motion in the substance. Here, there is the adaptability that is caused by the electronic structure. Therefore, complex molecules were synthesized from the floating substance by the energy that comes from outer world such as ultraviolet ray. The compounds of molecules will be evolved through the repetition of production and destruction. The floating substance such as bubbles will accumulate at the surface of water. But, the floating material is small compared with the surface of the sea. There are great amount of sea water. The liquid water is divided to clusters of water molecules. Although life period of the cluster is short, it contributes to the chemical reaction.

The photograph was taken at close distance of 1cm by using a digital camera PENTAX Optio-W90 under the reflected light. Here, the magnification is the maximum. The background was black in order to absorb the light. A shape of fine particle is recognized by a still image. The flicker for human's eye is caused by quick motion of the particle. The movement of particle was observed by frame-by-frame in the pictures of the movie at 30 frames per a second. Please see the movie at website [<https://www.youtube.com/watch?v=5dqmFpYQhc&feature=youtu.be>] on the bubble behavior in vicinity of the ice of carbonated water.

[Photograph 1]

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