

Mechanism of organization of molecules formed by intermolecular binding force

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[The mechanism to form an organization of molecules]

The membrane of bubble is formed by intermolecular force at the interface between liquid water and gas. Although individual intermolecular bonding force is not strong, it forms the macroscopic array. The macroscopic organization can be reproduced at the same condition.

[3 types of polyatomic ion in carbonated water]

CO₂ (gas) cannot be dissolved in water at high temperature. But the solubility in water is large at low temperature. The principal ion in the carbonated water will be changed by pH value as shown in Fig.1, from Drever (1988)[1].

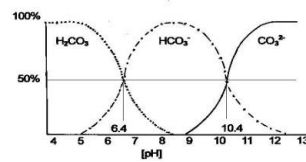


Fig.1 Different species in carbonate system as function of pH value

[Variation of pH value of carbonated water after mixing of iron powder]

As shown in Fig.2, the pH value will vary along time progress after mixing with fine powder (#300) of iron powder (5g) in 75cc of carbonated water.

The ion that contributes to make the bubble is HCO₃⁻.

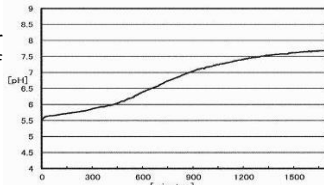


Fig.2 pH value of the carbonated water after mixing with powder of Fe

[Bubble are generated in the carbonated water with iron under UV irradiation in the similar environment of early Earth.]

Bubbles are generated in the carbonated water under the UV irradiation as shown in Fig. 3. Here, fine powder (#300) of iron (5g) was mixed with the carbonated water (100cc)

[2]. From the report [3], organic molecules are produced from the atoms those come from oxidation of iron in carbonated water by the energy that comes from outer world such as ultraviolet ray.



Fig.3 The bubbles produced from H₂O+CO₂ and Fe under UV irradiation (magnification x10)

[The mechanism that forms membrane from carbonated water with iron]

The membrane on the wall of glass is formed from the carbonated water with Fe. It indicates that the planer structure is formed by Fe(HCO₃)₂ · So, the author proposes the molecular models shown in Fig.4.

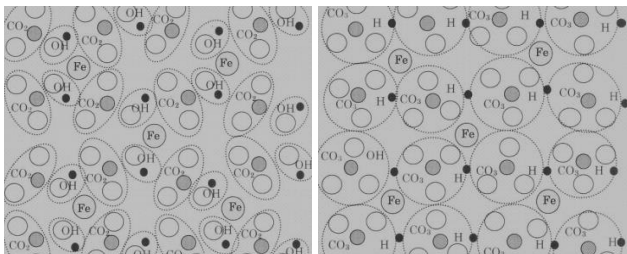


Fig.4 Formation mechanism of the membrane of bubble by Fe (HCO₃)₂

[Molecular mechanism of metabolism]

Positioning of molecule in a liquid state is conducted by intermolecular bonding force. The intermolecular bonding force affects the atom in each molecule. Electronic state of the atom quickly adapts to its surroundings. The structure of membrane in a bubble at beginning of damage will repair quickly by the intermolecular force. So, such organizations of molecule are able to keep long life.

[Molecular mechanism of intelligence]

A chain reaction in the membrane is one-way by the after-effect of reaction. The route of reaction was formed through transference of excited state. It plays a role as a memory of the chain reactions. An added reaction is able to represent the reactions concurrently activated. The added reaction is able to decide the next reaction. The activation of looped chain reactions is able to continue an excitation. The transference of activation can be carried out via transference of proton (H⁺). Such network of reactions is possible to create the metabolism for long life [4].

[Change of generation and evolution]

A tremendous number of organic molecules were generated. But a life is considered as a long series of actions. The population depends upon the period from birth to death. Only survived system is increased through the natural selection. Since intermolecular force is emphasized via the membrane, the molecular arrangement will decompose at collapse of the membrane. But some parts of the membrane do not decompose. The inherited parts included in a new system of molecules will contribute to evolution.

[Formation of protein by intermolecular bonding of the membrane]

Protein is a chain of amino acids. Each amino acids has possessed carboxyl group and amino group. So, the amino acids are attached to the membrane that is shown in Fig.4. Thermal motion of attached amino acids is suppressed and it suppresses decomposition of the connection. This portion of membrane plays the role of a catalyst. The membrane becomes robust by the structural protein. A part of membrane with protein is able to have a special form and function.

[Forming of the linkage between protein and t-RNA]

The elements of nucleotide and amino acid are fairly different. Phosphodiester bond of nucleotides and peptide bond of amino acids is also different structure. But amino acid of a protein and an activated portion of the nucleotide chain are able to correspond along the same time progress. The excited portion can be transferred via protons along the time progress. Concurrently excited states are possible to make a linkage. The specified amino acid is linked to specified portion of nucleotides. The amino acid is assigned by transfer RNA (t-RNA) during protein synthesis. The linear polymer of nucleotide that is concurrently formed is available as a record for production of the protein.

[Mechanism of the mutation]

The bubble is produced via intermolecular bonding. It is able to repair by the mechanism of production. The environment is changed by the results of production. The evolution takes place at the renewed environment. The evolved organization is reasonable but it had acquired by try and error. The evolution of creature is a very small probability, but it increases via a reproduction system accompanied with. That is the phenomenon of mutation.

[References]

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