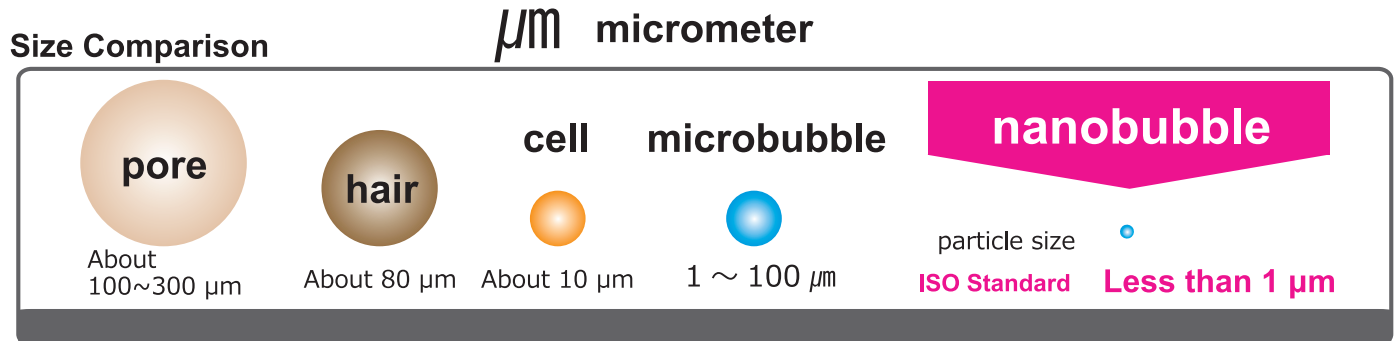


About Fine Bubbles

There are two types: microbubbles and smaller nanobubbles.

Among "fine bubbles," bubbles less than 100 μm in diameter and more than 1 μm (=0.001 mm) are "microbubbles"; Smaller bubbles with a diameter of less than 1 μm are called "nanobubbles."



Fine Bubble

Specific effects of fine bubbles (both microbubbles and nanobubbles)

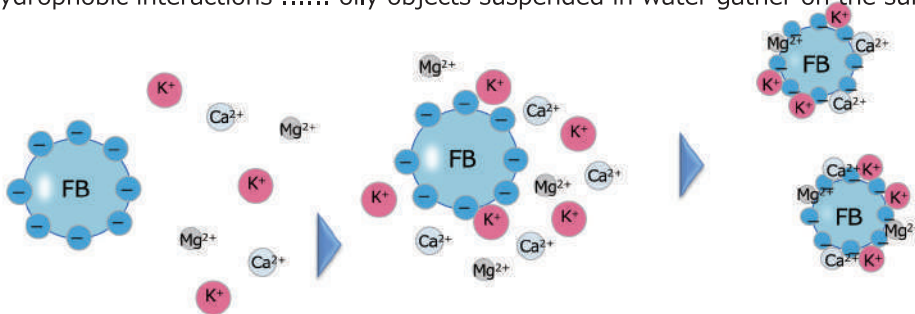
< Surface-active effect >

Surface Charging The surface of a bubble is negatively charged in water.

surface adsorption attracting objects that are charged with a polarity opposite to that of the bubble surface.

Surface repulsion Repels objects that are charged to the same polarity as the charging polarity of the bubble surface.

Hydrophobic interactions oily objects suspended in water gather on the surface of a bubble.



attract nutrients
K+, Ca+, Mg+, etc.

In the roots of plants
gather and promote
absorption

The negatively charged bubble surface adsorbs positively charged dirt and nutrients.

Specific effects of nanobubbles

< Gas storage action such as oxygen >

Long-term stability can be stable in water for long periods of time if not greatly stimulated.

Sustained supersaturation Suppresses the disappearance of dissolved gas components released from water to the outside air.

< Bioactive effects >

Promote plant growth Promote seed germination and plant growth.

long-term oxygen
is dissolved.

< Light Transparency >

Transparency appears transparent to the naked eye because it transmits visible light.

Light scattering Scatters light of shorter wavelength than visible light.

Promote germination
and growth

< Reaction promotion effect >

Reaction acceleration A reactive gas is selected as the gas in the bubble to accelerate the chemical reaction.

Nanobubbles are easily taken in from plant roots, maintain oxygen concentration and promote metabolism of organisms.

In particular, the growth of rhizomes can shorten the growth period and improve productivity and quality.