(1) The Principle of Hydrogen Peroxide determination using ORITECTOR M-5

Hydrogen Peroxide decompose to oxygen and water according to the following equation with addition of catalase solution. We know this concentration of Hydrogen Peroxide determined by detecting amount of dissolved oxygen produced with oxygen electrode.

$$H_2O_2 \xrightarrow{\text{catalase}} 1/2\ O_2 + H_2O$$

In this method, nitrogen gas introduced into sample and catalase solution to remove dissolved oxygen before analysis, and very low concentration of Hydrogen Peroxide (ppb order) is determined easily with detection of low concentration dissolved oxygen that is produced from Hydrogen Peroxide according to the equation.

(2) The Principle of oxygen electrode

The electrode equipped with this instrument is polarographic – membrane covered system(Clark electrode), and designed especially for the measurement of very low concentration dissolved oxygen.

When −0.5V～−0.8V is applied between cathode(platinum) and anode(silver) of this electrode, dissolved oxygen in sample solution permeated through the membrane is reduced at the surface of the cathode. This reaction give current that is proportional to oxygen concentration, so we can measure concentration of dissolved oxygen from this current value rapidly.

reaction at cathode $O_2 + 2\,H_2O + 4\,e^- \longrightarrow 4\,OH^-$

reaction at anode $4\,Cl^- + 4\,Ag \longrightarrow 4\,AgCl + 4\,e^-$