NewsRelease

NIPPON SHOKUBAI

February 17th, 2020

Nippon Shokubai Developed New Separator for Alkaline Water Electrolysis Which Supports the Conversion of Renewable Energy to "Green Hydrogen"

NIPPON SHOKUBAI Co., Ltd. (Headquarters: Chuo-ku, Osaka City, President: Yujiro Goto, hereinafter "Nippon Shokubai") developed the new separator for alkaline water electrolysis by applying our unique organic-inorganic hybrid technology and sheet forming technology. This new separator is suitable for producing green hydrogen because it has a high resistance against the gas cross-permeation and high efficiency of hydrogen generation. Also, it can be handled easily even in the dry condition. This new separator assists the spreading of "Green Hydrogen" worldwide, and contributes to the reduction of greenhouse gas(GHG) emissions.

To prevent global warming, many projects to reduce the emission of carbon dioxide gas have been carried out throughout the world. As a part of these activities, fuel cells have begun to be used in various usages such as vehicles and micro combined heat and power systems.
Today, the most common process of industrially generating hydrogen is steam reforming process. However, this process has issue of carbon dioxide emission because it uses fossil-originated gas as a resource. Therefore, alkaline water electrolysis (Figure 1) using renewable energy is drawing worldwide attention as hydrogen supply since it has no carbon dioxide emission. Also, large-scale demonstration projects are being promoted around the world.

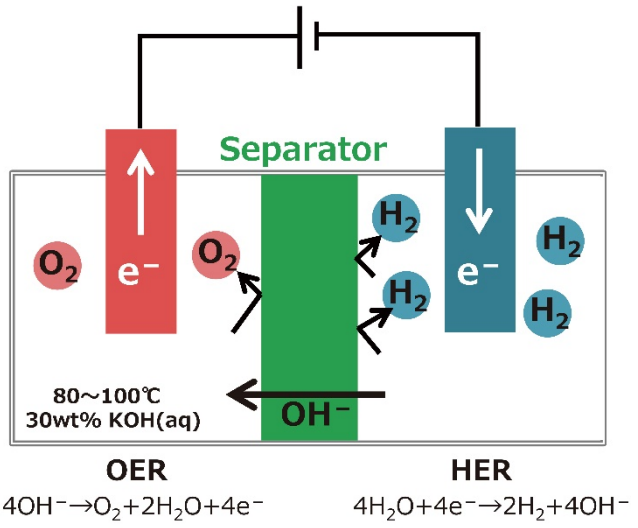

Fig.1: Schematic diagram of alkaline water electrolysis

Fig.2: Our newly developed separator

In this alkaline water electrolysis system, one of the key materials that affects the hydrogen production efficiency is the separator (green part in Fig. 1). A separator for alkaline water electrolysis requires high resistance against cross permeation of hydrogen and oxygen and low ohmic resistance of separator (high ionic conductivity). Moreover, as alkaline water electrolysis

is operated in very severe condition, like high temperature and high alkaline concentration, very few separators could be applied for alkaline water electrolysis.
Nippon Shokubai has successfully developed the new separator with high resistance against cross permeation of hydrogen and oxygen and low ohmic resistance of separator (high ionic conductivity) for alkaline water electrolysis, by applying our unique organic-inorganic hybrid technology and sheet forming technology.

Our new separator can be expected to reduce the electrical power consumption and enables higher hydrogen purity.
We will introduce and exhibit this new separator at a Nippon Shokubai booth at the “The 11th International Rechargeable Battery Exhibition” held at Aomi Hall, Tokyo Big Sight, on February 26 (Wed.) to 28 (Fri.).

About NIPPON SHOKUBAI Co., Ltd.: Since 1941, Nippon Shokubai has grown up its business with unique catalyst technology. Nippon Shokubai has supplied, for example, ethylene oxide, acrylic acid, automobile catalysts, process catalysts and so on. Among all, our global market share of superabsorbent polymer is the largest in the world now. Nippon Shokubai is a global chemical company operating under its corporate mission "Providing affluence and comfort to people and society with our unique technology." http://www.shokubai.co.jp/en/

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