

October 16, 2012  
Sumitomo Chemical Co., Ltd.  
Sumitomo Corporation  
Renaissance Energy Research Corporation

## **Joint Venture to be formed in CO<sub>2</sub> Separation Business**

Sumitomo Chemical Co., Ltd. (President: Masakazu Tokura; Head office: Chuo-ku, Tokyo; “Sumitomo Chemical”), Sumitomo Corporation (President and CEO: Kuniharu Nakamura; Head office: Chuo-ku, Tokyo), and Renaissance Energy Research Corporation (President: Osamu Okada; Head office: Kyoto-shi, Kyoto; “Renaissance”) announced their agreement to form a joint venture (the “New Company”), to enter the CO<sub>2</sub> separation business using CO<sub>2</sub> permselective membrane technology in a membrane separation process.

CO<sub>2</sub> separation technology is mainly used in hydrogen production and natural gas refining to remove CO<sub>2</sub> from the desired gas. Currently commercialized CO<sub>2</sub> separation technologies, such as chemical absorption and physical absorption methods, require a substantial amount of thermal energy and large-scale facilities, making the cost reduction a key challenge. Based on the CO<sub>2</sub> permselective membrane developed by Renaissance with the support of the New Energy and Industrial Technology Development Organization (NEDO) and the Kansai Bureau of Economy, Trade and Industry, the three companies have conducted technical investigations and market research on a simpler membrane separation process that significantly reduces energy consumption. As a result, the three companies succeeded in developing a CO<sub>2</sub> permselective membrane with world-leading separation performance, verifying the superiority of its performance. Accordingly, the companies have decided to establish the New Company and set out a full-scale operation toward commercializing the technology.

At present, the scale of the worldwide market for the CO<sub>2</sub> separation business is estimated to be 3 trillion yen a year (\*1), and it is expected to grow even larger with the economic growth of emerging countries and the accelerated development of small and medium-sized gas fields. Another potential application of CO<sub>2</sub> separation is in carbon capture and storage (CCS) technology, a technology that holds great promise in reducing greenhouse gas emissions. The membrane separation process is viewed as an effective way of reducing CO<sub>2</sub> separation and capture costs, which account for over half of overall CCS costs, and the companies believe that their newly-developed CO<sub>2</sub> permselective membrane can make a significant contribution to commercializing CCS technology.

The New Company will work on developing membrane technologies suitable for a variety of applications while exploring appropriate business models and the establishment of mass production capabilities. New Company plans to conduct demonstration testing with the membrane and seeks to begin full-fledged business operations within twelve months or so from its establishment.

(\*1) Estimation based on separation and capture costs (running costs) based on existing commercial technologies.

## ***Reference***

### **Overview of New Company**

Business: CO<sub>2</sub> separation business using CO<sub>2</sub> permselective membrane, including development of membranes to exploit a variety of applications  
Address: Tokyo  
Capital: 800 million yen  
Shareholders: Sumitomo Chemical: 47.5%; Sumitomo Corporation 47.5%; Renaissance: 5%  
Establishment: By the end of this year (expected)

### **Overview of Renaissance**

Business: - Development of CO<sub>2</sub> permselective membrane and other gas transmission membranes, and development of their application processes  
- Sales and licensing of catalyst/process technologies, mainly in the energy and hydrogen fields  
Address: Kyoto  
Capital: 290.25 million yen  
Establishment: July 2004