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To Whom It May Concern,

New Lithium-ion Battery Technology Developed

New Silicon-based Negative Electrode (SILX[®]) Achieves Higher Capacity and Energy Density

Mitsui Mining & Smelting Co., Ltd. (Mitsui Mining & Smelting, President : Yoshihiko Takebayashi) has developed a new Silicon-based negative electrode (SILX[®]) to be used in rechargeable lithium-ion batteries.

SILX[®] realizes higher capacity and power, which contributes to the further expansion of the batteries useful applications.

Mitsui Mining & Smelting aims to begin commercialization of SILX[®] in the year of 2010, through partnerships with battery manufacturers and OEMs as battery users.

< A new Silicon-based negative electrode with higher capacity and high power >

SILX[®] has a unique network-structure composed of Silicon and Copper, which introduces improved performance in comparison with Carbon-based negative electrodes currently commercialized in the market.

The capacity density of the electrode (*Note 1) will be increased by approximately 100% of today's Carbon-based negative electrodes, and the energy density of battery (*Note 2) will be 30 to 50% higher than current products as well. And SILX[®] will provide a structurally much larger electric current in longer use.

Therefore, a battery using SILX[®] makes it possible to store more energy (higher capacity) and generate more power (higher output).

< Practical cycle life >

In addition, SILX[®] first achieved the practical life cycle in the category of new materials for negative electrode except Carbon.

One of the market challenges with developing new negative electrodes using Silicon is maintaining a practical cycle life of the battery. Most systems see significant reductions in a battery useful life, meaning the amount of times a battery can be recharged is significantly reduced.

As a Silicon-based negative electrode absorbs lithium-ion from the positive electrode and swells, durable structure and materials are required to realize a long useful life. Mitsui Mining & Smelting accepted this very difficult industry challenge and has demonstrated great success in maintaining a practical cycle life equivalent to existing negative electrodes, by covering Silicon

with thin copper (*Note 3) and forming structure with spaces to accommodate the swelling of the cell inside its negative electrode.

< Commercialization through partnerships with companies >

SILX[®] and basic concept of specifications and structure have already been developed. Mitsui Mining & Smelting is now challenging several subjects such as a suitable combination with positive electrode, establishment of technology for mass production to accelerate commercialization through partnerships with battery manufacturers and OEMs as battery users.

Mitsui Mining & Smelting has been working closely with companies from several industries and has received positive feedback regarding **SILX[®]**. In Addition, several have expressed interest in creating a business relationship with Mitsui Mining & Smelting for the use of **SILX[®]**.

< Business circumstance and prospect >

Lithium-ion batteries are widely used not only for mobile phones, laptop computers, digital still cameras but also power tools and other large energy consumers which require much more power. They are also expected to be employed in the automobile industry which is developing new hybrid and fully electric vehicles that are more fuel efficient and environmentally friendly.

Therefore, lithium-ion batteries with higher capacity and power density are required in the market. However, the technologies of the existing batteries using Carbon-based negative electrode have already reached the theoretical bounds to maximize the energy density, and the market demand is directed to negative electrode with newly developed materials, which must be the core element to realize higher performance. No significant materials or concepts of negative electrode have been ensured in the industry so far.

SILX[®], a newly developed Silicon-based negative electrode overcomes such market difficulties. The development was commenced by a project team under the direct control of the CTO (Chief Technology Officer) based on the company policy of “Front Loading” for manufacturing. By harmonizing and utilizing the technologies from other business units of Mitsui Mining & Smelting such as battery materials, powdering, electrochemistry, and copper foil, the team was able to achieve success by introducing its advanced technology where others have been less successful.

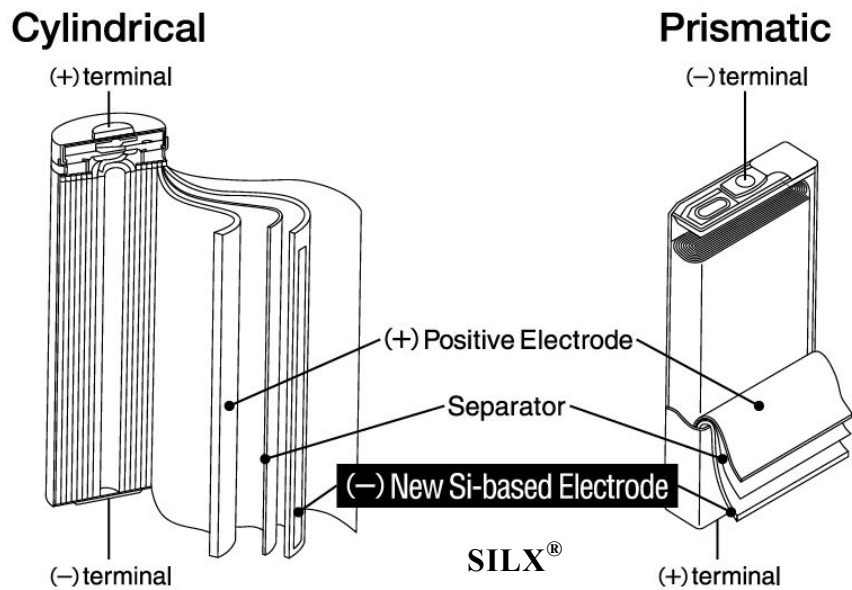
Mitsui Mining & Smelting is confident that **SILX[®]** will extend the application of the rechargeable lithium-ion batteries, and it will contribute to the further expansion of the products to meet the requirements in the society for saving energy, coexistence with environment, development of mobile equipments and so on.

*Note 1 Capacity density of the electrode;
Quantity of electricity per volume or mass

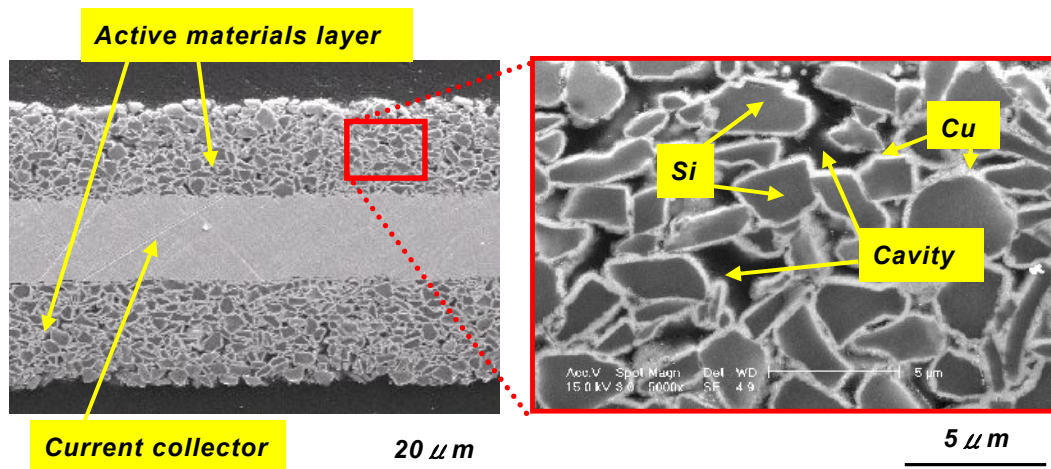
*Note 2 Energy density of battery :
Quantity of energy per volume or mass in the battery

*Note 3 Covering Silicon with thin copper;
The illustration is attached below.

Structure of the Lithium-ion battery



Cross-sectional views and structure of SILX®



[For further information on this matter]

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