

SEKISUI KASEI CO., LTD.

2-7-1 Nishi-shinjuku, Shinjuku-ku  
Tokyo 163-0727 JAPANTel. 03-3347-9711  
ir\_pr@sekisui-kasei.com

www.sekisui-kasei.com

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Electrodes for measuring brainwaves that use the gel material “ST-gel” developed by SEKISUI KASEI CO., LTD. (Head Office: 2-4-4 Nishi-tenma, Kita-ku, Osaka, Japan; President: Masato Kashiwabara) have been adopted for an ear-type BCI\*1 device, “XHOLOS Free,” which does not cover ears and are developed by CyberneX Inc. (Head Office: 1107 Adel Kamata, 5-26-8 Ota-ku, Tokyo, Japan).

## Electrodes for Measuring Brainwaves using ST-gel™ be used in "XHOLOS Free"'s BCI device by CyberneX Inc.

### 1. Background

Recent advances in “Brain Tech,” which fusions neuroscience and Information technology, are expected to lead to the development of technology to measure and visualize information related to the brain, and to the provision of new services, in a variety of fields, such as healthcare and mobility.

“XHOLOS,” developed by CyberneX is a brain information utilization platform using next-generation BCI devices that can access biometric information such as brainwaves. While CyberneX has already released an earphone-type BCI device that measures brainwaves via the ear canal, the electrode portion covers both ears in order to obtain weak brainwaves, and has had problems such as use while driving, prolonged wear, making it difficult to listen to music or watch movies.

### 2. Details

“ST-gel” is a highly functional gel material that is gentle on the skin and has excellent safety, made from a polymer matrix containing water, a moisturizing solvent, and electrolytes. It is widely used as a bioelectrode component that comes into contact with the skin.

To expand its lineup of BCI devices, CyberneX was exploring the concept of a device that only needed to be worn on one ear or could measure brainwaves without blocking the inner ear. Therefore, in addition to higher measurement accuracy, it needed electrodes that seamlessly follow the contact surface of the skin while also reducing discomfort while the device is being worn. To this end, SEKISUI KASEI worked to develop an electrode design that utilizes the conductivity and adhesiveness of ST-gel based on the knowledge we have built up so far, and succeeded in measuring the weak brainwaves from the outer part of the ear. CyberneX went on to adopt this electrode in its new device, “X HOLOS Free.”



### 3. Future Development

SEKISUI KASEI Group has positioned Brain Tech, which is rapidly evolving, as one of the leading fields in which we can leverage the features of ST-gel. Going forward, we will continue to promote the development, manufacture, and sale of customized electrodes for non-invasive wearable devices\*2 that do not put strain on the body.

※1 BCI: “Brain Computer Interface” is a general term for wearable devices, such as headbands or earphones, that are worn on the body to transmit electrical signals from brain waves, etc. to a computer as an interface to connect the human brain to an external device.

※2 Non-Invasive Wearable Devices: Devices that do not require insertion into the skin or body orifice, therefore do not damage and put little strain on the body.

END