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“Glass-ribbon” Adopted as Microchip Component for Micro Total Analysis System at RIKEN

Glass-ribbon of Nippon Electric Glass Co., Ltd. (NEG) has been adopted as stop valves of microchip for the Micro Total Analysis System, now under research and development by RIKEN. On a microchip, the flow of solution containing the specimen (cells and molecules) is controlled by stop valves, which are conventionally made of resin. Riken has selected glass as material for the stop valves for the first time in the world.

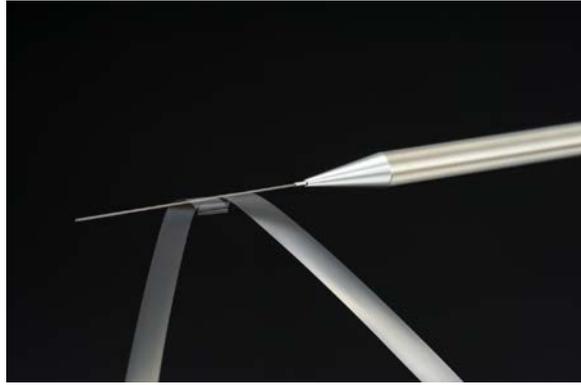
The Micro Total Analysis System is a next-generation analysis system which enables cellular and molecular structure analyses and tests on a single microchip. The microchip for this application is manufactured on the basis of semiconductor processing technologies. It is composed of glass substrates with microchannels. Glass-ribbon is made into a stop valve that controls the flows of solution through the microchannels. The alkali-free Glass-ribbon 6 μm (0.006 mm) in thickness is used for the valve.

The Glass-ribbon is not only superior to resin in endurance, it is also extremely thin and can be created in precisely required sizes. Because of these features RIKEN has highly appreciated Glass-ribbon and has adopted it as suitable material for valves to control solution flows. NEG also supplied alkali-free glass for the microchip substrates.

The microchips are being developed by the Laboratory for Integrated Biodevice, Quantitative Biology Center, RIKEN. This application of Glass Ribbon is expected to contribute to their research and development.

The major features of Glass-ribbon are: (1) because it is very thin, it can be bent or rolled like resin film; (2) although it is unpolished, the surface is extremely flat and smooth, and (3) because it has rounded edges on both sides, it is highly resistant to bending and twisting. Furthermore, being glass, it has a number of excellent properties: chemical stability, heat resistance, outstanding optical characteristics, gas barrier properties and electric insulating capacity.

NEG will continue to focus on developing various applications of Glass-ribbon.



So flexible, it can be wrapped around a mechanical pencil lead