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Development of ultra-thin glass based micro/nano fluidic devices

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A microchip (also called as micro fluidic chip or micro chemical chip) is a palm sized small board with micro and nano fluidic channels fabricated by micro or nano machining techniques. It is widely utilized for the integration of complicated chemical and biochemical experimental processes. This is a spin-off technology from integrated circuit fabrication techniques in the field of electronics and information technology. Currently, it is applied to various wet processes in chemistry and biology and a number of sophisticated systems have been developed till now. There are several advantages including, saving the amount of chemical reagents and short analysis time. By exploiting these significant advantages, various kinds of chemical systems such as analysis, synthesis and cellular experiments have been integrated onto a microchip. Regarding this microchip technology, the author has developed several original technologies on fabrication, fluid control and construction of mechanical devices for bio-analysis. For example, totally glass based micro valves, pumps, filters and ultra-thin, flexible glass microchips as shown in Figure 1 have been demonstrated based on an ultra-thin glass sheet handling techniques. In this work, these achievements are comprehensively introduced.

Biography

Yo Tanaka received his PhD degree from the University of Tokyo. He worked as an Assistant Professor in the Department of Applied Chemistry, School of Engineering, University of Tokyo, and has been working as a Unit Leader in the Quantitative Biology Center, RIKEN, Japan, since 2011.

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