

Abstract Submitted
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Development of microbubbles generator using microchannel toward biomedical applications HIRONOBU KAJI, REI MASUDA, KAZUHITO INOUE, The University of Tokyo, MITSUHISA ICHIYANAGI, Sophis University, IKUYA KINEFUCHI, SHU TAKAGI, YOICHIRO MATUMOTO, The University of Tokyo — Microbubbles have been already used as ultrasound contrast agents to visualize microcirculation system. They are also expected to be used for the drug delivery agent. For these bubbles, important requirements are their size and functionality such as carrying drugs and staying stability in vivo. Aiming at the development of microbubbles with the well-controlled size and functions, we have been developing a microbubble generation system using microchannels. Advantages of the method using microchannels are to generate small- and monodisperse-size microbubbles with the wide variety of choice in both liquid phase and gas phase and the capability of surface coating. In the present study, microbubbles are generated using T-junction type microchannel. We have designed the channel shape to reduce the bubble size. The improvement of the shape has enabled us to generate the smaller microbubble whose diameter is $6.1\mu\text{m}$. Moreover, the effect of the viscosity in the liquid phase are investigated and it is confirmed that smaller bubbles are generated with the increase of viscosity. In addition, we have developed a new type microchannel for the surface coating of a microbubble. The results will be discussed in the presentation.

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