

Principal Researcher	Nobuhide Kasagi			Number of Reserchers	5	
Research Institution • Department • Title	Professor, Department of Mechanical Engineering, The University of Tokyo			Location of Institution	Bunkyo-ku, Tokyo	
Title of Project	Creation of highly functional thermal and fluids mechanism for micro cell processing					
Abstract of Research Project	<p>Life science is one of the fundamental technologies that support future human society and welfare. Especially, a wide range of clinical application of the tissue engineering, which is to recover lost functions of living bodies and internal organs, is strongly desired. Cell sorting system, in which cell sources like stem cells can be detected, selected and extracted, is indispensable for tissue engineering. Reduced cost, size and analysis time, and also enhanced accuracy and purity of the cell processing system are major challenges for its use in the markets. In the present study, highly functional thermal and fluids mechanism for micro cell processing, with which target cells can be extracted rapidly and safely in a micro channel, should be developed. In micro-scale biochemical and thermo-fluidic systems, there may arise unfavorable issues such as inferior mixing, phenomena effects due to surface tension and surface property, destruction of cells due to flow shear, adhesion of cells or polymers to conduit wall surface. Therefore, biofluid-compatible MEMS technology will be introduced in order to fabricate and test the proposed micro conduit for controlling precisely the fundamental thermal and fluids processes such as mixing, convection, extraction and temperature control. The final goal of the present project is to establish general design principles for advanced cell sorting system for actual clinical applications.</p>					
References	<p>Suzuki, H., Kasagi, N., and Ho C.-M. , “Chaotic micro mixer using magnetic beads for sell sorting system,” Proc. University of Tokyo BioChip Symposium, (2003), pp. 24-25 (in Japanese).</p> <p>Suzuki, H., Kasagi, N., and Ho, C.-M., “Chaotic mixing of magnetic beads in micro cell,” 3rd Int. Symp. Turbulence and Shear Flow Phenomena, (2003), Sendai, to be presented.</p>					
Term of Project	Fiscal years 2003-2007 . (5years)					
Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	32,100	23,500	18,500	13,600	11,200	98,900
Homepage Address	http://www.thtlab.t.u-tokyo.ac.jp					