

# Development of microfluidic devices and their applications in cell culturing with controlled microenvironment

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## Abstract

I will report our contribution on the development and applications of microfluidic devices. Some examples will be used for demonstration. These include, chemical synthesis of DNA microarray, PCR, cell culturing, chemical gradient and electrotaxis (i.e. migration of adherent cell in weak electric-field).

## Biography

Dr. **Ji-Yen Cheng** received his B.Sc., M.Sc., and Ph.D. degree in Chemistry Department of National Taiwan University. After graduation in 1998, he then started his post-doc research on the DNA microarray in Institute of Biomedical Sciences in Academia Sinica Taiwan. In 2001 he became an assistant researcher in Research Center for Applied Sciences in Academia Sinica and was promoted to research fellow in 2013. His research interest is in the biological applications of microfluidics. Some specific topics include the following:

Cell-based micro analysis, especially cell response in weak DC EF, cell-cell interaction co-culture chip, cellular chemotaxis, electrotaxis and metastasis, affinity binding and separation.

Rapid prototyping of microfluidic biochip using laser micromachining.

Microarray technologies such as flexible in-situ array synthesis, rapid hybridization, mRNA labeling chip, and portable DNA amplification chip.

Laser micromachining – mechanism and applications.

His innovative works in rapid prototyping and DNA amplification chip have been reported in Lab-on-chip in 2005 Sep and 2005 Oct.

