

## Portable and disposable system for the detection of pH, Cu ions and Fe ions in drinking water

이영준<sup>1,2</sup>, 김도현<sup>1,2,\*</sup>

<sup>1</sup>한국과학기술원 생명화학공학과;

<sup>2</sup>초미세화학공정센터(CUPS)

(DoHyun.Kim@kaist.ac.kr\*)

Although the quality of drinking water is generally acceptable when the water leaves the purification plants, it can be polluted on its way to the faucet. In other cases, raw water can be contaminated in rivers or reservoirs. Therefore a simple and accurate detection system which can measure water quality and detect hazardous contaminants in the water is required in order to avoid drinking of contaminated water. Portability is one of the requirements for this detection system. Our microfluidic detection system for the test of water quality shows the changes of color in the detection chambers when harmful contaminants are present over critical value in drinking water. The proposed microfluidic system consists of a micro-pump, microchannels and detection chambers. It successfully measured pH and detected Cu and Fe ions in the water. The advantages of this microfluidic system can be found in its portability and simplicity for detection. The response time is less than a few seconds. This microfluidic system will expand its application to detect other chemical species and heavy metals with proper sensitivity and accuracy.