

Integration of Magnetoresistance Sensor in Microfluidic Chip for Magnetic Particles Detection

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Abstract : Application of magnetic particles (MPs) has been applied in biomedical field for many years. There are lots of advantages through this mediator including high biocompatibility and multi-diversified bio-applications. However, current techniques for evaluating the quantity of the magnetic-labeled sample assays are rare. In this paper, a Wheatstone bridge giant magnetoresistance (GMR) sensor integrated with a homemade detecting system was fabricated and used to quantify the concentration of MPs. The homemade detecting system has shown high detecting sensitivity of 10 $\mu\text{g}/\mu\text{l}$ of MPs with optimized parameter vertical magnetic field 100 G, horizontal magnetic field 2 G and flow rate 0.4 ml/min.

Keywords : magnetic particles, magnetoresistive sensors, microfluidics, biosensor

Conference Title : ICMN 2017 : International Conference on Microfluidics and Nanofluidics

Conference Location : Tokyo, Japan

Conference Dates : September 07-08, 2017