

## Microfluidic sample preparation system for integration of micro mixer and solid phase extraction

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A microfluidic cell lysis chip integrated the micro-mixer and Solid phase extraction (SPE) was developed for achieving a micro total analytical system for the analysis of cells and their constituent proteins. This work was focused on the development of miniaturized sample preparation systems where cell disruption is needed to obtain intracellular materials for analysis of protein. It consists of a magnetically actuated micro-mixer for disrupting bacterial cell of intracellular green fluorescent protein (GFP), hydrophobic valve for cell lysate manipulation, and packed porous polymerized monolith chamber for solid phase extraction (SPE) and filtering debris from cell lysate.