

Light sheet-based flow cytometer with ability to obtain images and retrieve objects from the whole blood

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Abstract Text

The new type of flow cytometer to image and capture fluorescent-labelled objects with magnetic sorting that works with whole undiluted blood was developed. Optical design of imaging cytometry part is based on well-known SPIM-Fluid [1] opensource construction. Flow cell with magnetic capture and sorting based on permanent rare-earth magnet was used to retrieve objects from the blood flow or some other media. The overall performance of the device was tested both *in vitro* and *in vivo* shunting two large blood vessels of laboratory animals. Objects captured from the blood flow can be later characterized by a broad reach of *in vitro* measurement methods. It opens new horizons for searching rare objects like circulating tumor cells in the blood flow and pre-clinical testing of targeted drug delivery carriers.

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