

Biomedical device for cell detection

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Abstract.

The medical field is a promising domain that has in perspective the idea “small products mean big future”. The devices that study biosystems, nanoparticles, cells, microanalysis of biomolecules, microbes, markers, etc are built using nano / microfabrication tools and processes, and they are part of the BioMEMS (Bio- Micro-Electro-Mechanical Systems) branch [1], [2].

The paper presents the main stages of fabrication for such a device as well as the efficient combination of materials. The device has 4 modules: 1) the inlet tanks for: blood, a lysing solution, a solution that stops the lysis, and a tank for the remaining cells; 2) two sensors that count the cells; 3) a selection and caption chamber that is being functionalized with specific antibodies for the cell type that we want to determine; 4) microfluidic channels. After the design was made in a special program called CleWin5 and modeled in another specific one called SEMulator3D, it was fabricated within the National Institute for Research and Development in Microtechnologies - IMT Bucharest. This kind of device has many advantages such as the reduced volume of materials used for fabrication, fast sample processing, reduced costs, portability, etc.

References.

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