Yecang Chen

Yuchen Fu, Xiaofei Yuan, Andrew Glidle, Umer Ijaz, Huabing Yin

James Watt School of Engineering, University of Glasgow, G12 6DX, Glasgow, United Kingdom

2495282C@student.gla.ac.uk

Continuous raman activated cell sorting with machine learning

Raman activated cell sorting (RACS) is an emerging technology for isolating cells based on phenotypic function. Without the need for externally labelling cells, it has unique advantages in investigating natural microbial communities. However, challenges, such as low throughput and robustness, have yet to be addressed for its broad deployment. Here, we developed a continuous flow RACS system integrated with machine learning algorithms, using the full Raman spectra for on-the-fly cell classification at a high throughput of ~ 300 events/min. With its automation and robust performance, this platform provides a versatile tool for flow cytometry and cell sorting in various applications in microbiology, biotechnology, and life science.

References

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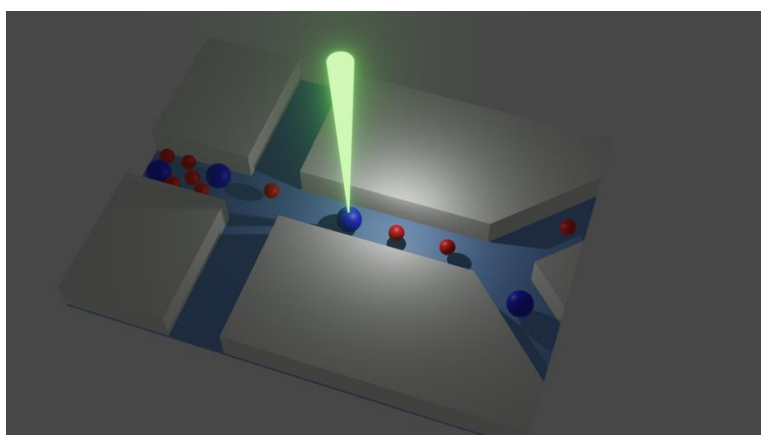[4] McIlvenna et al., (2016). Lab Chip 16: 1420-1429.

Figures

Figure 1: The simplified design of the microfluidic chip