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(54) Title: MICROFLUIDIC CHIP DEVICE FOR OPTICAL FORCE MEASUREMENTS AND CELL IMAGING USING MICROFLUIDIC CHIP CONFIGURATION AND DYNAMICS

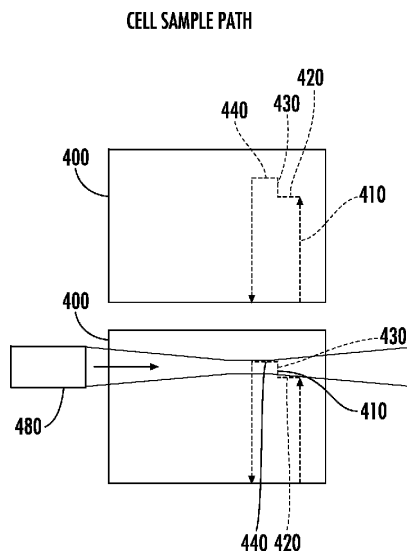


FIG. 4A

(57) Abstract: A microfluidic chip configuration wherein injection occurs in an upwards vertical direction, and fluid vessels are located below the chip in order to minimize particle settling before and at the analysis portion of the chip's channels. The input and fluid flow up through the bottom of the chip, in one aspect using a manifold, which avoids orthogonal re-orientation of fluid dynamics. The contents of the vial are located below the chip and pumped upwards and vertically directly into the first channel of the chip. A long channel extends from the bottom of the chip to near the top of the chip where it takes a short horizontal turn. The fluid is pumped up to a horizontal analysis portion that is the highest channel/fluidic point in the chip and thus close to the top of the chip, which results in clearer imaging. A laser may also suspend cells or particles in this channel during analysis.

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