

## Electronic supplementary information

# Wash-free non-spectroscopic optical immunoassay by controlling retroreflective microparticle movement in microfluidic channel

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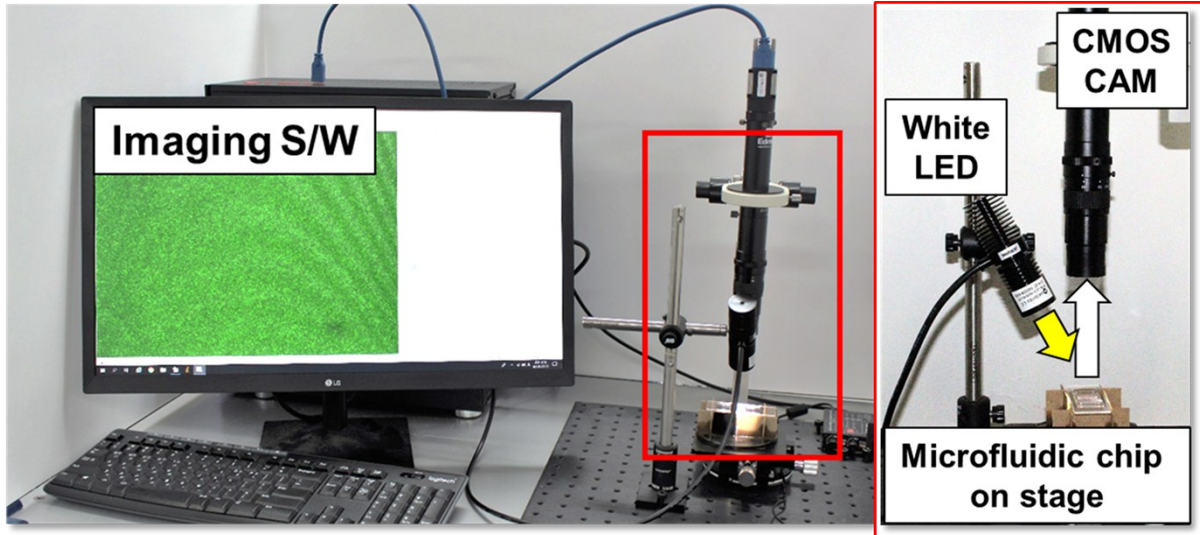
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Korea


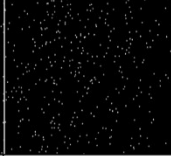
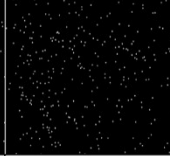
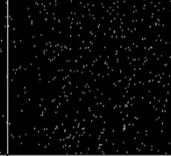
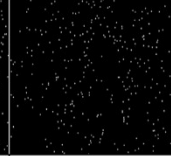
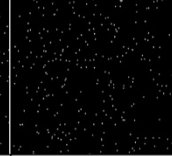
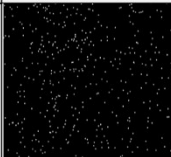
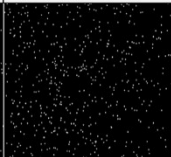
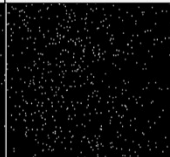
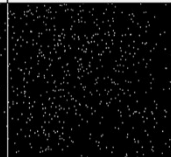
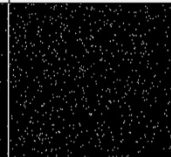
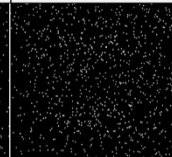
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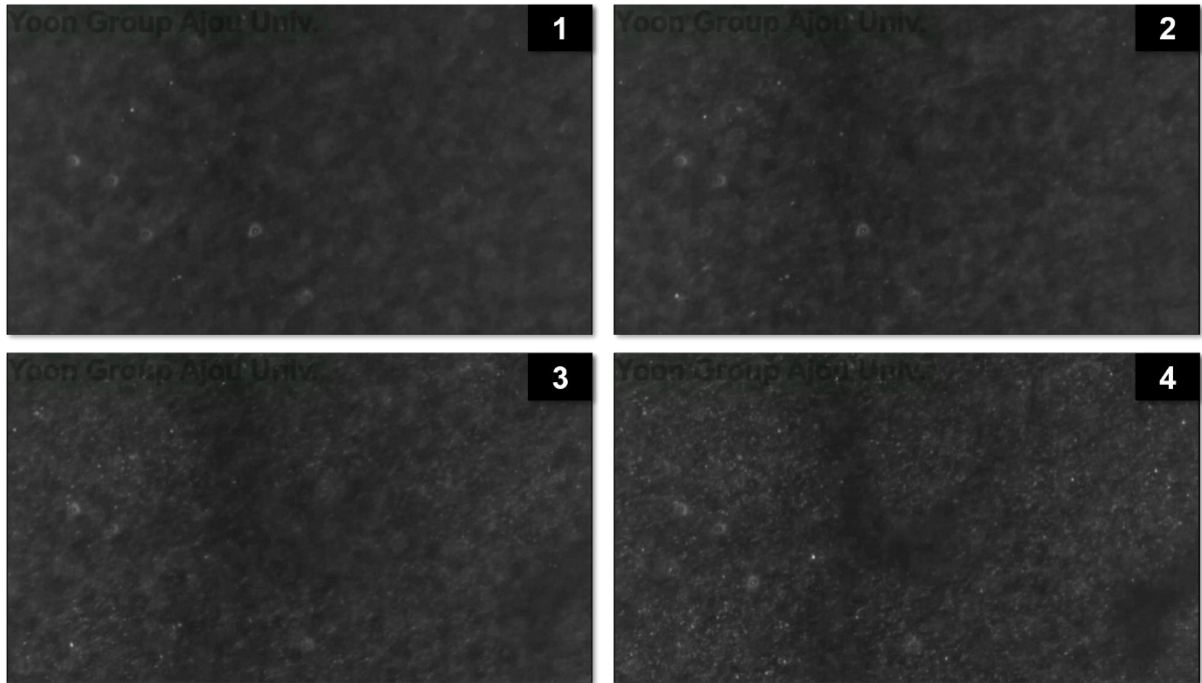
**Supplementary Figure 1.** Overall view of retroreflective optical setup with the detailed positioning of the light source and detector, which focused on the sample stage (right picture). The CMOS camera registered the retroreflective signals from RJPs and real-time imaging software captured images of sensing surface on the microfluidic chip.



**Supplementary Figure 2.** *The immunoassay result images regarding the existence of the sedimentation process in the assay procedure. Buffer-spiked CK-MB samples were assayed employing the proposed immunoassay protocol. A control group (upper row) did not include the inversion of a microfluidic chip, thus omitting the sedimentation process; whereas, the bottom row samples included inversion of the chip as planned.*

<b>Conc.</b>	<b>0 ng/mL</b>	<b>0.1 ng/mL</b>	<b>1.0 ng/mL</b>	<b>10 ng/mL</b>	<b>100 ng/mL</b>	<b>1000 ng/mL</b>
<b>Control Group (w/o Sedimentation)</b>						
<b>Conc.</b>	<b>0 ng/mL</b>	<b>0.1 ng/mL</b>	<b>1.0 ng/mL</b>	<b>10 ng/mL</b>	<b>100 ng/mL</b>	<b>1000 ng/mL</b>
<b>CK-MB test (w/ Sedimentation)</b>						

**Supplementary Video.** *This video exhibits the sedimentation effect observed through the PMMA at the bottom of the channel (upright position) when the RJP solution was injected. Thumbnail images represent the movement of particles recorded in time sequence.*



\*File name: Kim et al. Supplementary video.mp4