

Micron-size Electrodes Fabrication for Capacitively Coupled Contactless Conductivity Detection (C⁴D)

Thursday, May 21, 2015 8:00 AM (3 hours)

Capacitively Coupled Contactless Conductivity Detection (C⁴D) is the detection technique used to detect both charged and non-charged particles in solution when performing electrophoretic separation in microfluidic devices. With the C⁴D electrodes not directly exposed to solution, contamination of detecting specimen can be avoided. In this work, the new planar micro-size C⁴D electrodes on a glass slide fabrication technique based on Printed Circuit Board (PCB) patterning was developed to be used with microfluidic device. The negative dry film photoresist used was Dupont Riston FX-515 with the thickness of 15 microns. The opening area size in the photoresist film down to 50 microns was achieved using 15 second exposure of 400 nm – wavelength light source, and 30 seconds development time in 0.85% Na₂CO₃ solution. The patterned glass slide was deposited with approximately 20 nm-thick gold thin film using sputtering technique to create the gold C⁴D electrodes.

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Session Classification: Poster-2

Track Classification: Instrumentation, Metrology and Standards