Electronic Supplementary Material (ESI) for Lab on a Chip.

Single Ascospore Detection for the Forecasting of Sclerotinia Stem Rot of Canola

Electronic Supplementary Information

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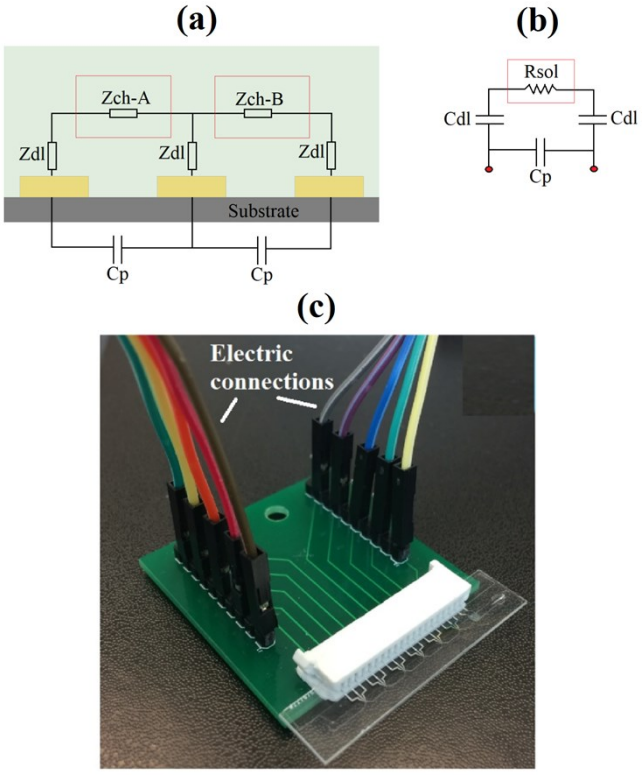

Figure S1: (a) Basic electrical impedance model of the measuring system, $Z_{ch\text{-}A}$ and $Z_{ch\text{-}B}$ represent the channel impedance, Z_{dl} is the double layer impedance and C_p is a parasitic capacitance; (b) Simplified electrical impedance model, R_{sol} is the solution resistance and C_{dl} is the double layer capacitance; (c) Custom-designed chip holder for easy connection with SP-200 potentiostat and DEP signal generator.

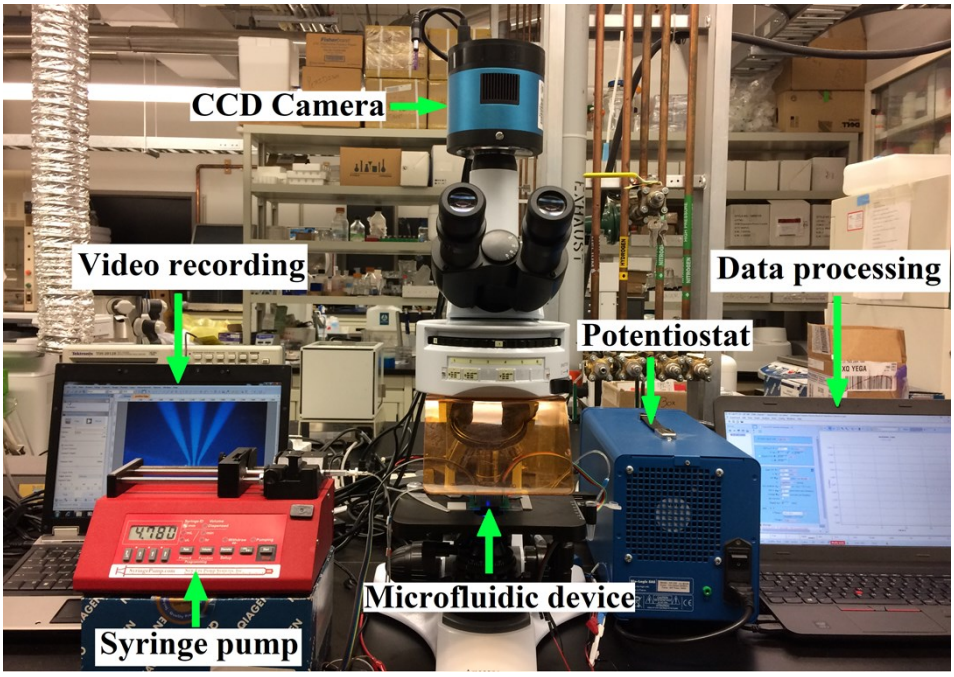

Figure S2: Experimental setup: The microfluidic device is electrically connected to a DEP signal generator and potentiostat. Fluid flow is generated with a syringe pump and tygon tubes connected to inlet-outlet ports of the device. Video data is recorded using a CCD camera.

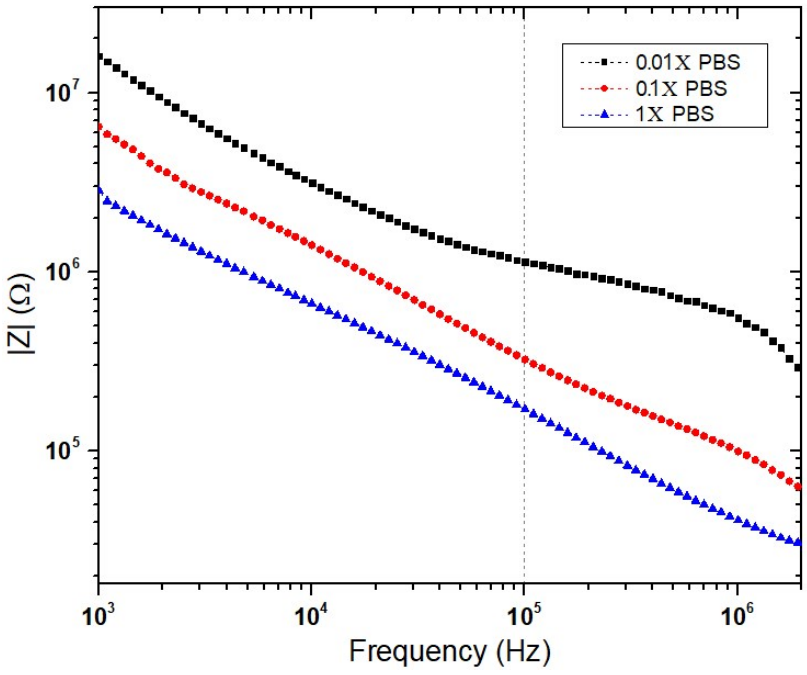

Figure S3: Impedance spectroscopy measurements ranging from 1 kHz to 2 MHz at different PBS concentrations. Symbols show the average value of five impedance measurements per frequency. The dashed vertical line indicates the frequency at which experiments are performed (100 kHz).

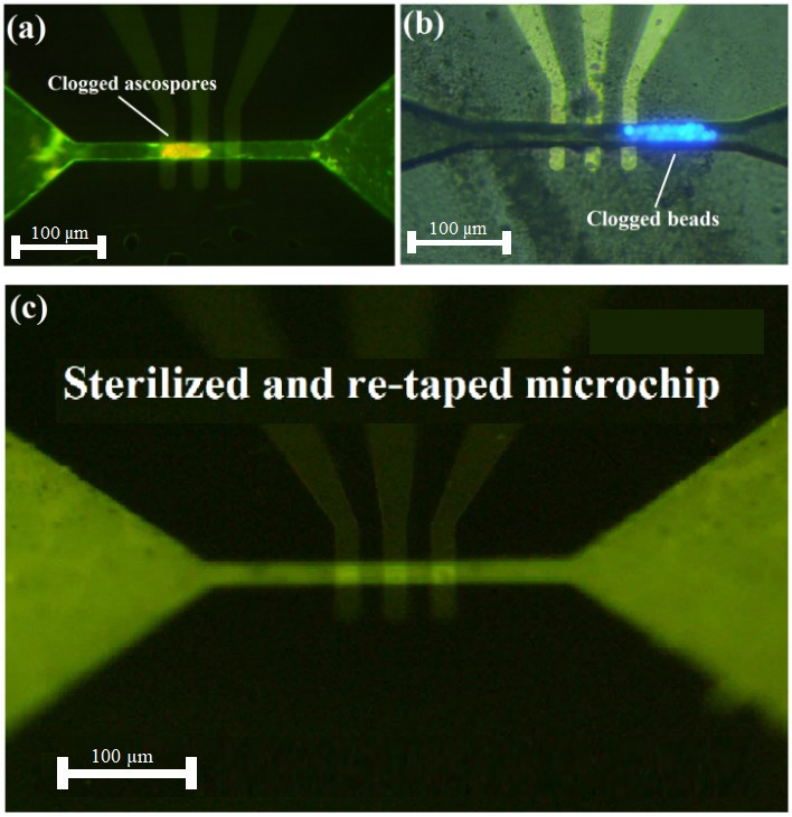

Figure S4: Optical images of clogged channels during initial experiments: (a) Ascospores blocking the channel constriction during an experiment; (b) Beads with 10 µm diameter blocking the channel constriction during an experiment; (c) Sterilized and re-taped chip. Scale bars equal 100 µm.