

Supplementary Information on

Unveiling nutrient flow mediated stress in the plant roots using on-chip phytofluidic device

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1. Region of interest (RoI) for sectioning

The sections were taken from 1 to 2 mm distance from the root tip, which lies in the region of interest (ROI). It is a common practice in plant research to specify the ROI for analysis which is shown below in Fig. S1. Additionally, for the chosen ROI of cross-section, both the elongation and differentiation zones exist as found from the reported study of Shen-Miller *et al.*¹

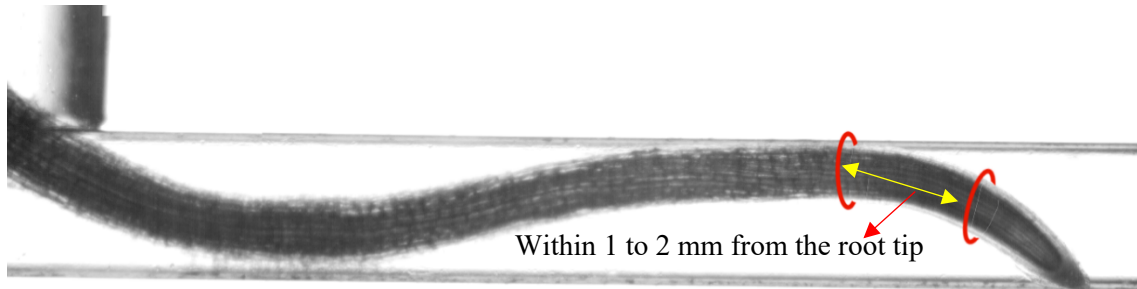


Fig. S1 Representation of the part of the root taken for anatomical sections.

1. J. Shen-Miller, R. E. McNitt and M. Wojciechowski, *Plant Physiol.*, 1978, **61**, 7–12.

2. 3D printed, Acrylonitrile butadiene styrene (ABS) Mold and casting setup

The Mold for the PRMD consists of (i) 3D printed cast made of Acrylonitrile butadiene styrene (ABS), (ii) brass wires of cross section 0.8 mm × 0.8 mm, and (iii) pipette tips, as represented in Fig. S2a.

After the printing of the mold, the wire was inserted inside the Mold through the holes made at both sides of the Mold (cf. Fig. S2b). Pipette tips of desired lengths and cross sections (broad and narrow) were cut and placed in the Mold as seen in Fig. S2b. Then the PDMS was poured in the Mold and the whole setup was soft baked at 45°C for 10 hours.

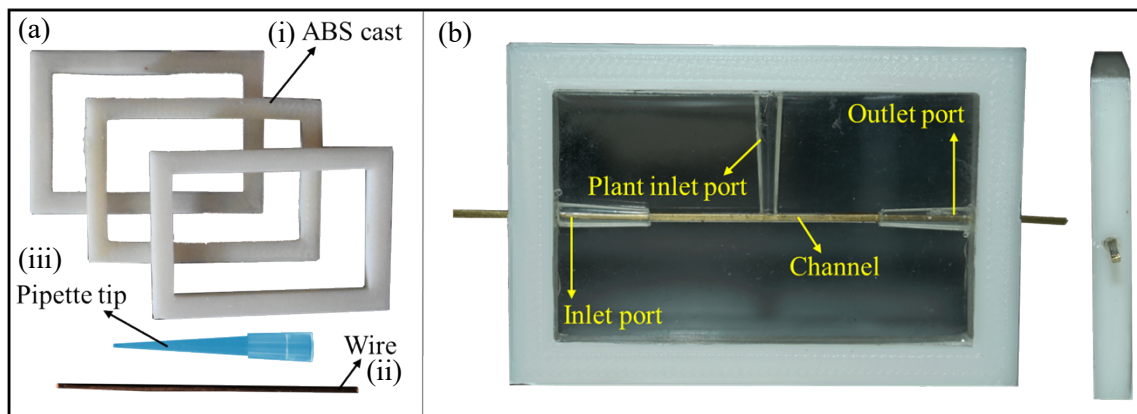


Fig. S2: Images of ABS print and casting material for the fabrication of the PRFD