SUPPORTING INFORMATION

Super-transparent Soil for In-situ Observation of Root Pheno-types

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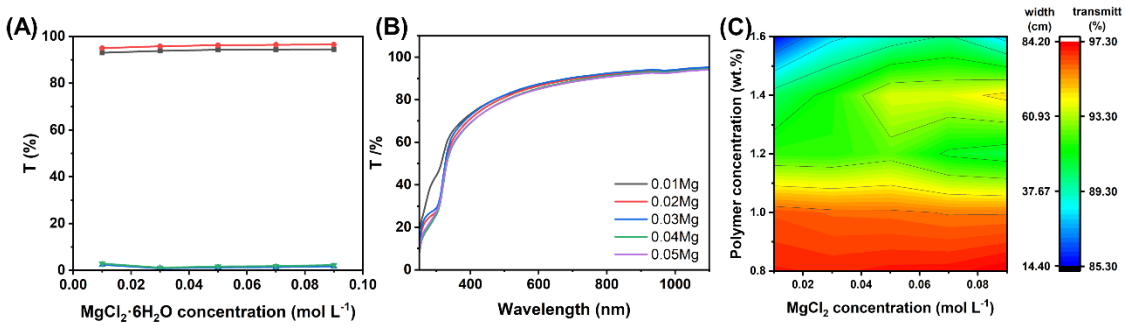


Figure S1. (A) s-TS gel beads (H_4G_8nMg, n=0.01 ~ 0.09 mol·L^{-1}) in saturated state (upper) and unsaturated state (lower) at 800 nm (black, blue) and 1080 nm (red, green) UV transmittance. (B) Transmittance curves of s-TS gel beads (H_4G_8) treated with different Mg ion concentrations (0.01-0.05 mol·L^{-1}) in the wavelength range of 250 - 1100 nm. (C) Transmittance and maximum visualization width of s-TS at 800 nm.

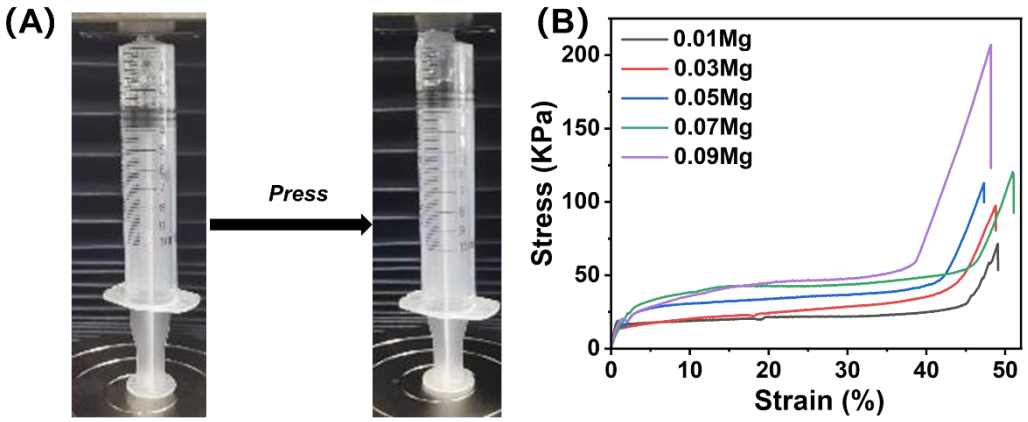


Figure S2. (A) Compression experiment performed by stacking s-TS beads inside a syringe. (B) Compression curve of TS beads (H_4G_8nMg, n=0.01 ~ 0.09mol·L^{-1}).

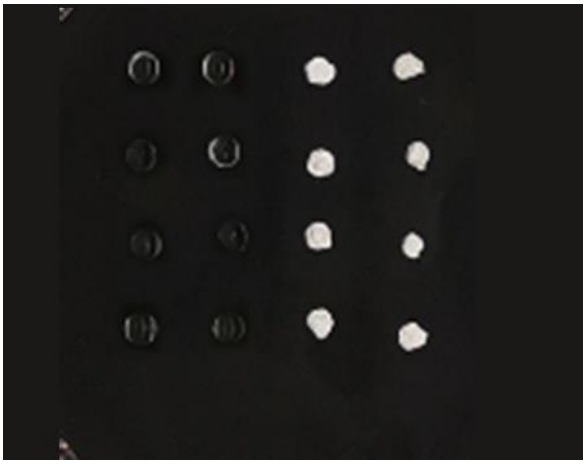


Figure S3. Pictures of s-TS beads before (left) and after (right) lyophilization.

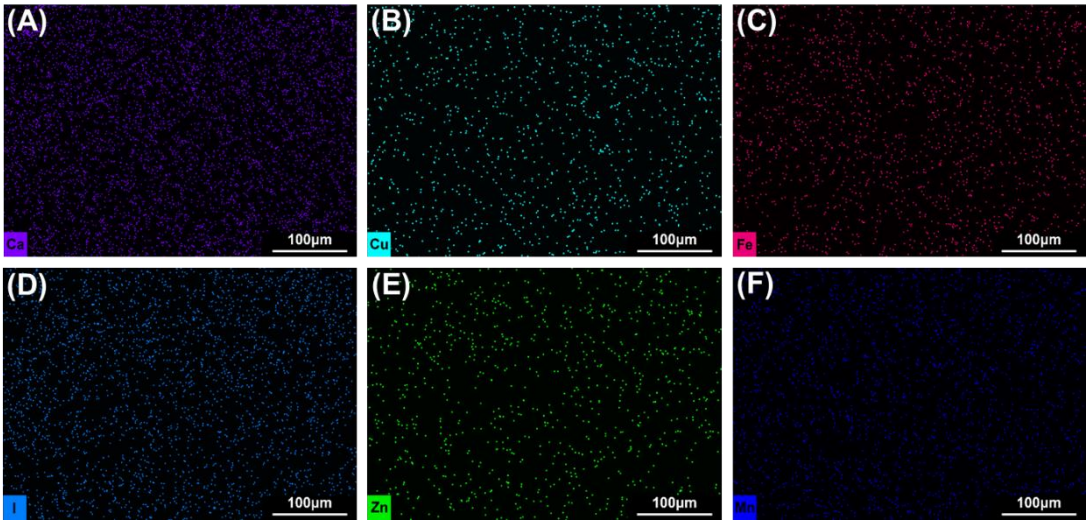


Figure S4. (A-F) EDX images at the internal and external interfaces of TS gel beads.

X-ray diffraction (XRD) patterns were obtained over 2θ ranging from 10 to 60°at a scanning rate of 5 $^{o}\cdot min^{-1}$ on a Powder X-ray diffractometer (Bruker D2 Phaser/D2 phaser, Germany).

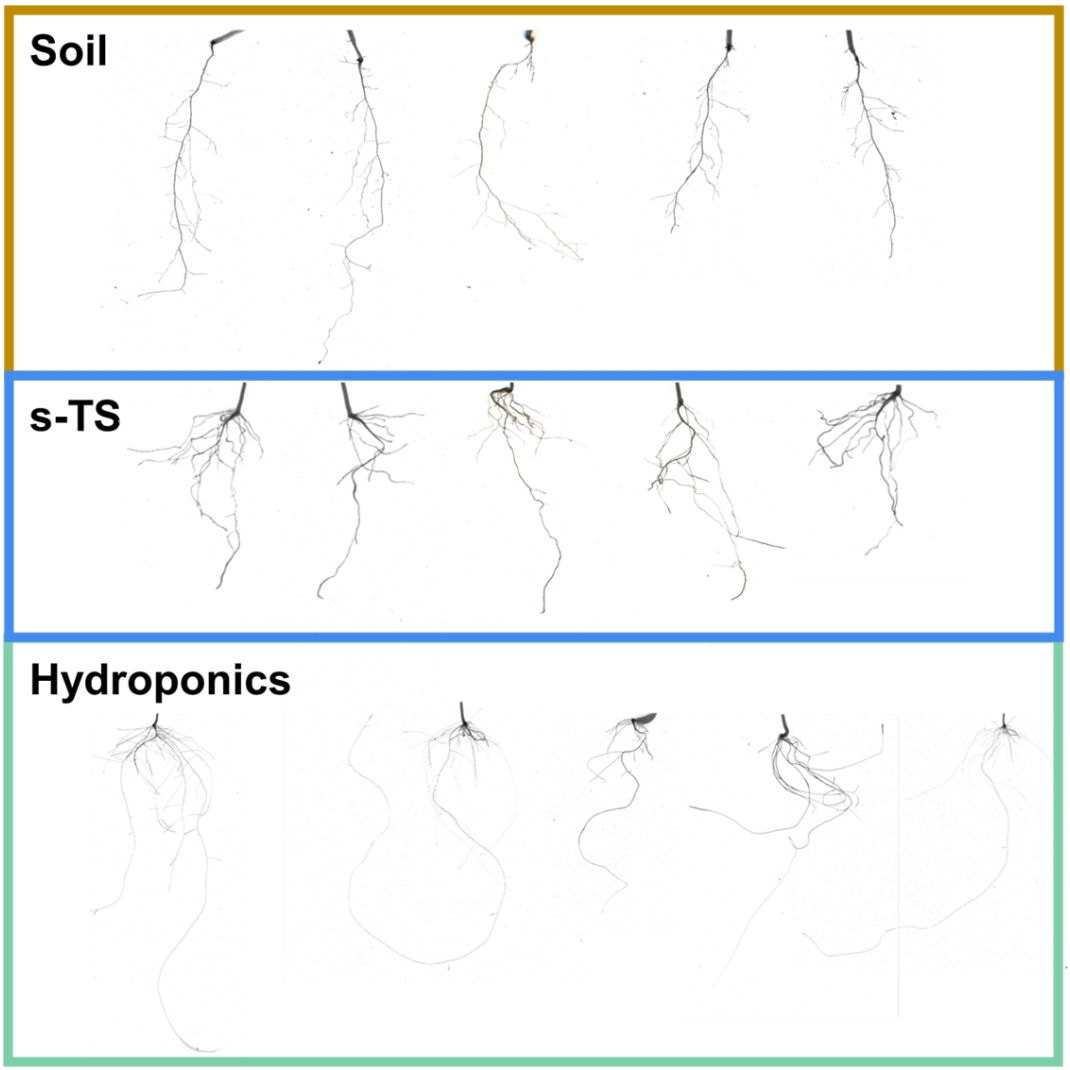


Figure S5. Root phenotype imaging images of rapeseed roots in soil, s-TS, and hydroponics.