

RESEARCH ARTICLE

Construction of gelatin methacryloyl-based artificial skin substitutes with “small-micro” vascular networks via hybrid double-crosslinked coaxial and extrusion bioprinting

Supplementary file

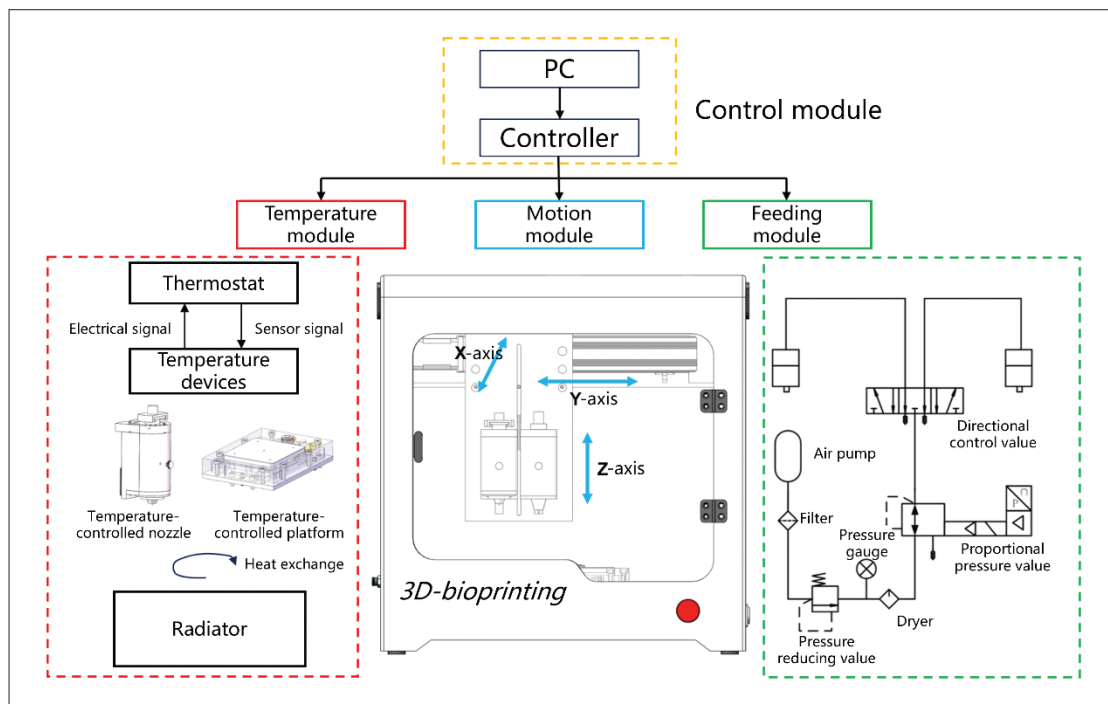


Figure S1. Design principle of the three-dimensional (3D) bioprinter.

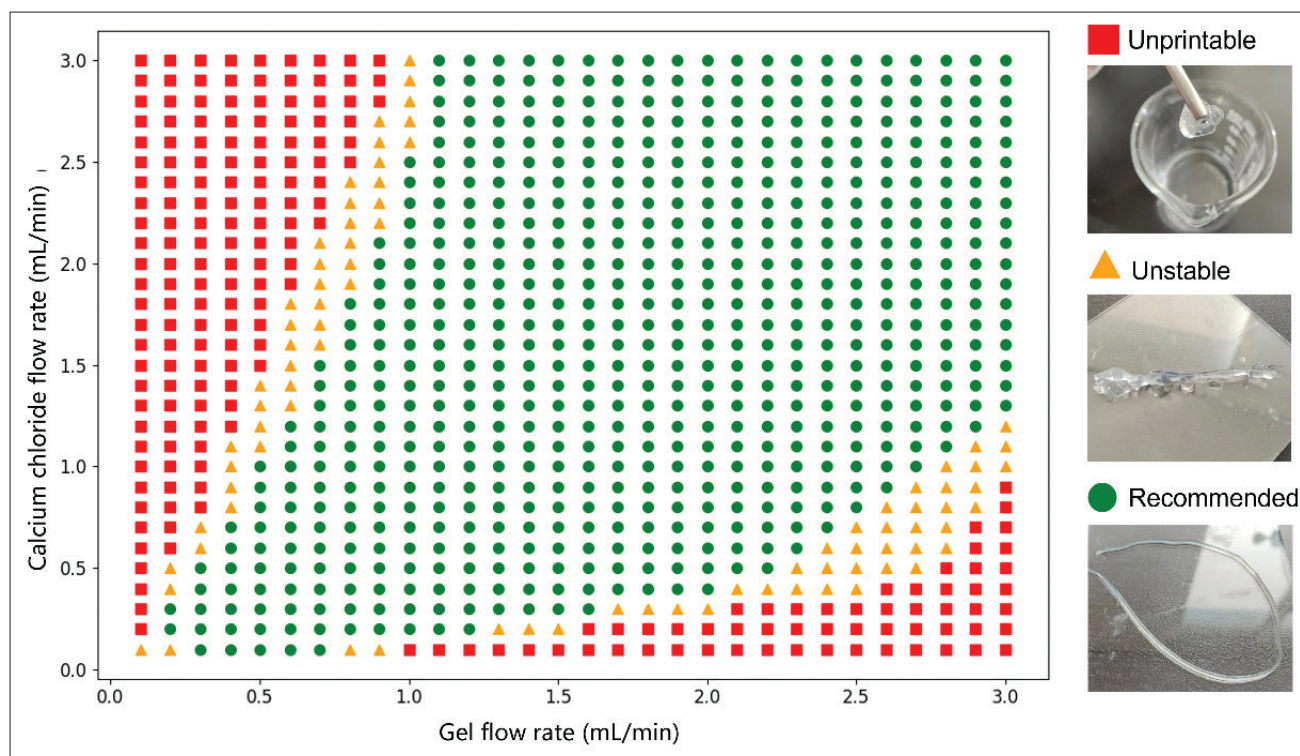


Figure S2. Inner-to-outer flow rate ratio during ionic crosslinking coaxial printing.

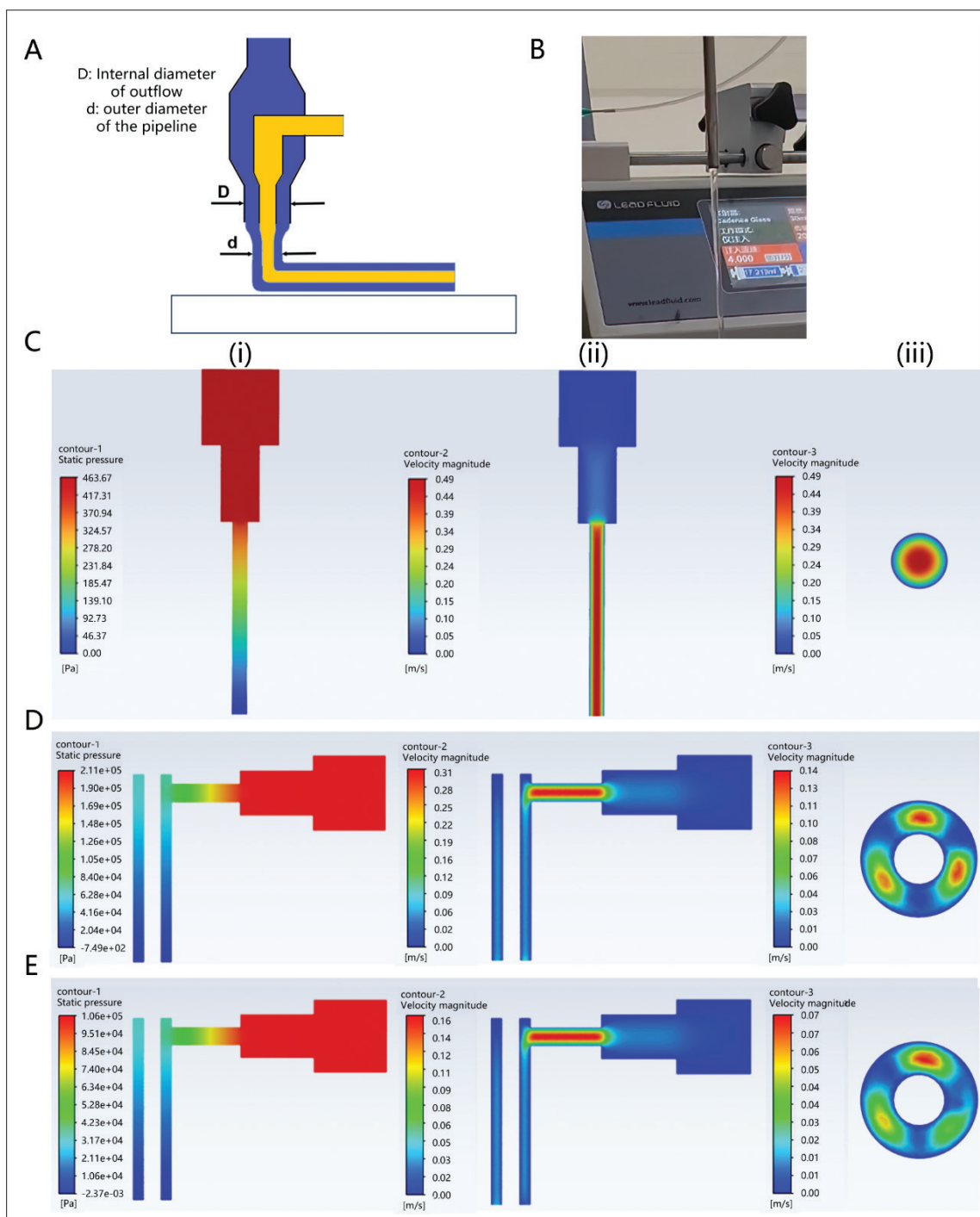


Figure S3. Fluid simulation of the coaxial printing nozzle. (A) Cross-sectional view of the nozzle. (B) Contraction of the hydrogel under the influence of surface tension and gravity. (C) Fluid simulation of the inner flow. Fluid simulation of the outer flow at inlet velocities of (D) 2 mL/min and (E) 1 mL/min, showing: (i) pressure distribution on the longitudinal cross-section, (ii) flow velocity distribution on the longitudinal cross-section, (iii) flow velocity distribution on the transverse cross-section.