

## 3D printable gelatin/nisin biomaterial inks for antimicrobial tissue engineering applications

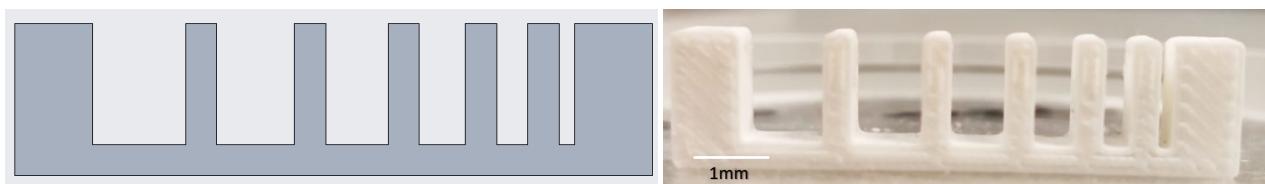
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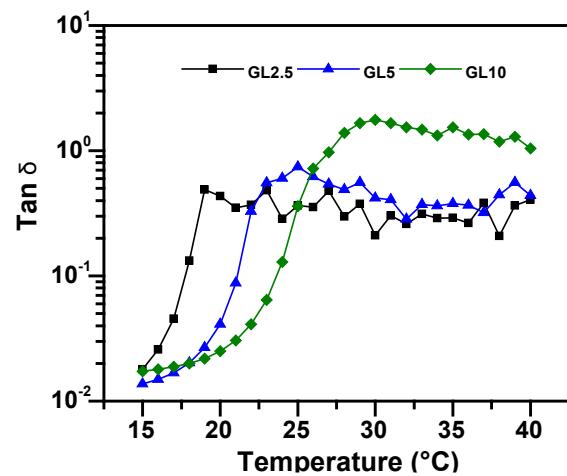
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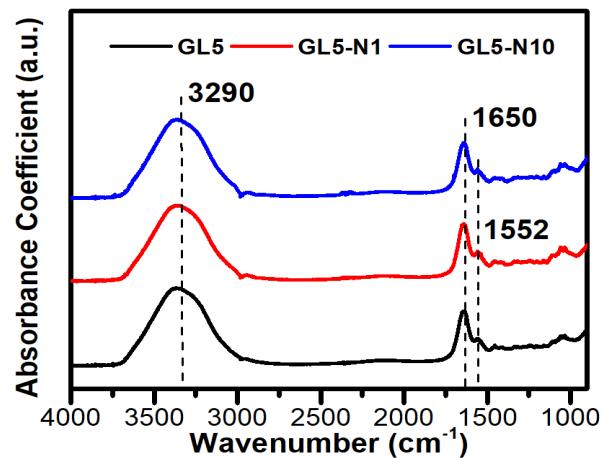
Supplementary Information



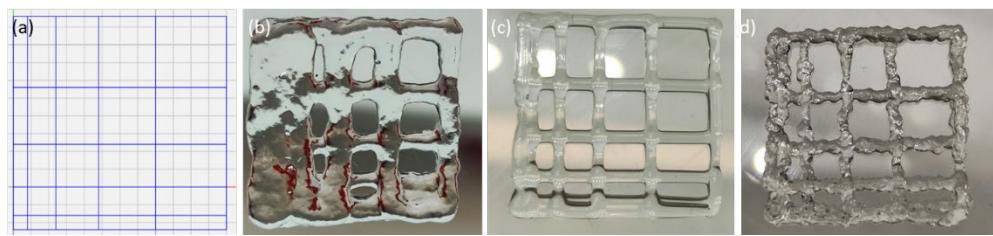
**Figure S1:** CAD design and printed seven pillar stage.



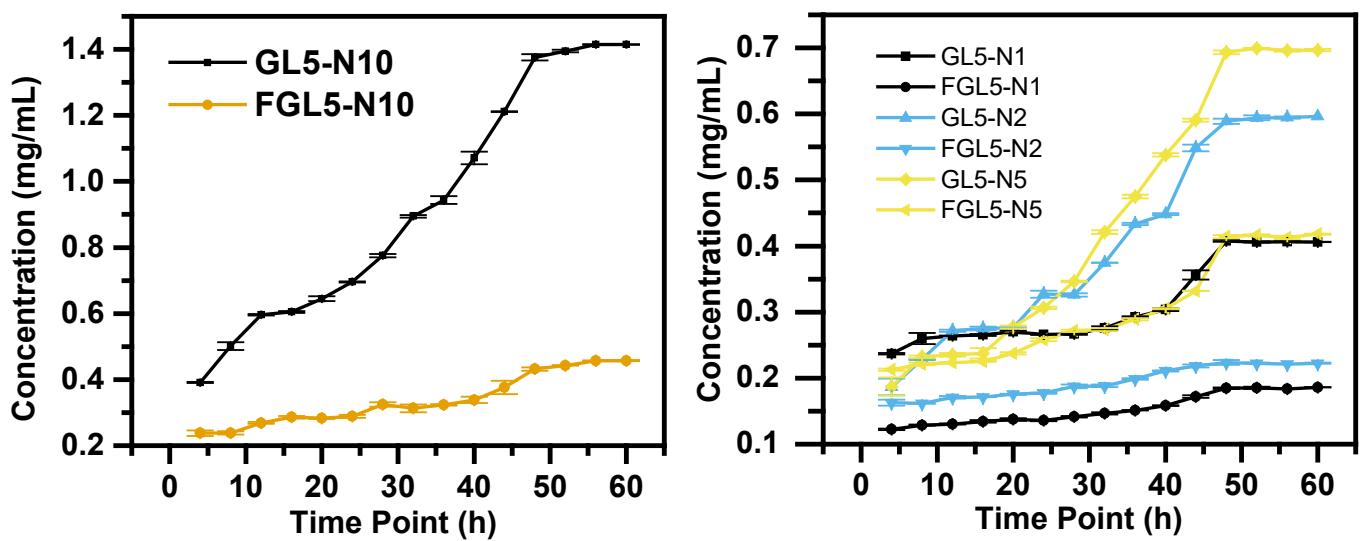
**Figure S2:** Tan  $\delta$  values as a function of temperature. Viscoelastic characterization of gelatin inks.



**Figure S3:** Fourier-transform infrared spectroscopy of GL5, GL5-N1 and GL5-N10 inks.



**Figure S4:** Printed grid patterns to assess diffusion rate percentage. a) 2D design of grid pattern designs. b) GL2.5 ink. c) GL5 ink. D) GL10 ink.



**Figure S5:** Nisin drug release for all ink concentrations over a 60-hour period measured by high-performance liquid chromatography (HPLC).