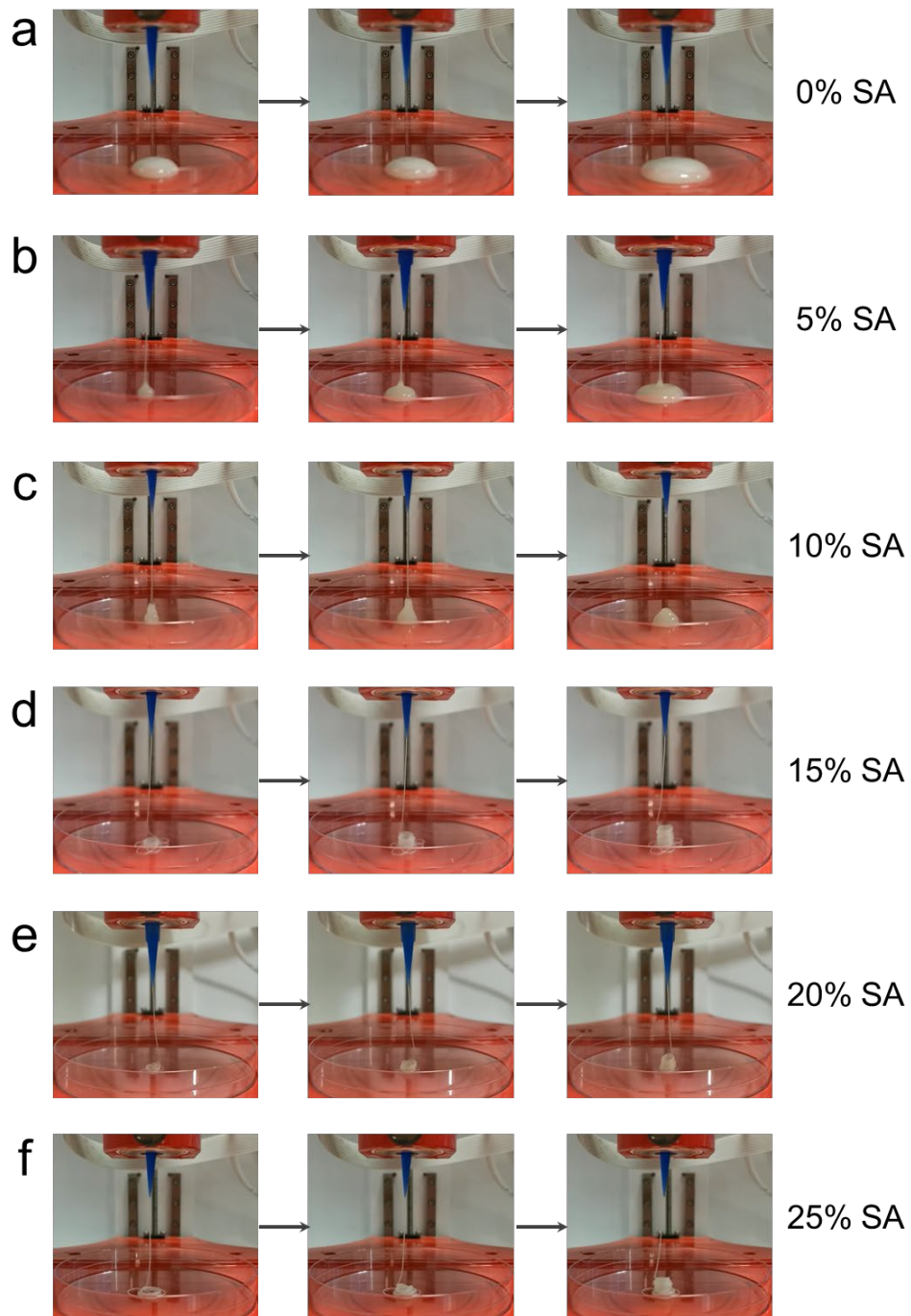
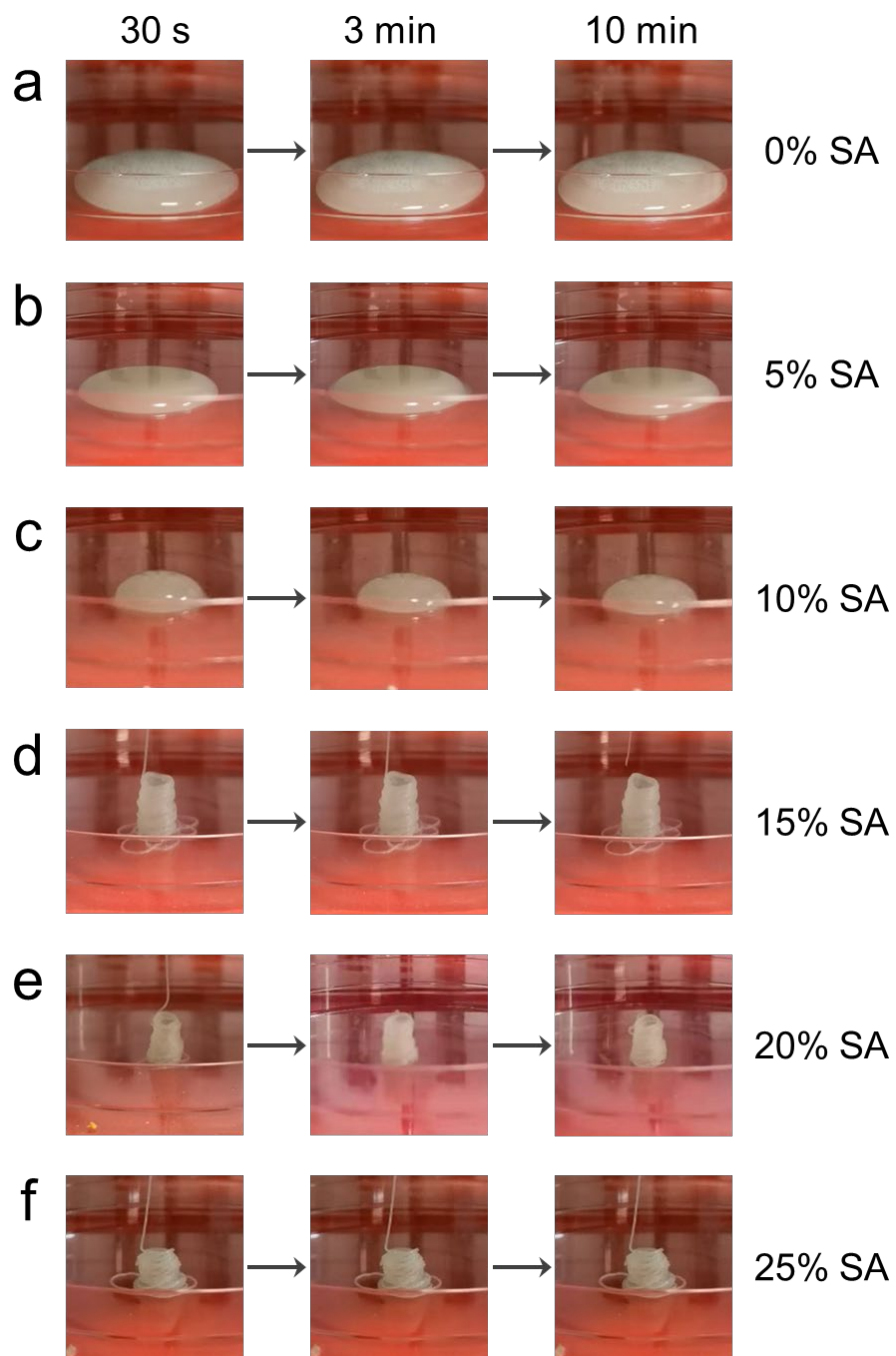


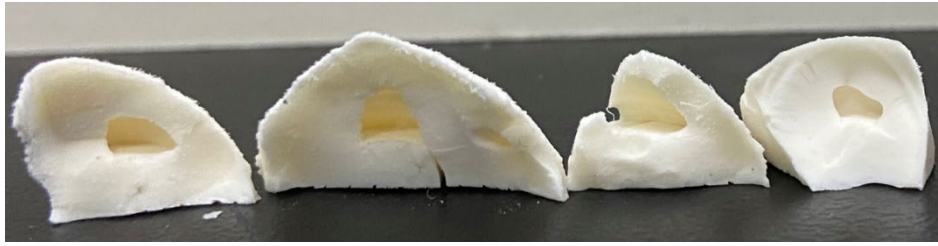
## Supplementary information



**Fig. S1** 3D printing process of capsular device with different bioinks, (a) without SA; (b) with 5% SA; (c) with 10% SA; (d) with 15% SA; (e) with 20% SA; and (f) with 25% SA.



**Fig. S2 Time evolution of manufactured structures after printing with different bioinks. (a) without SA; (b) with 5% SA; (c) with 10% SA; (d) with 15% SA; (e) with 20% SA; and (f) with 25% SA.**



**Fig. S3** Optical images of internal structures of as-printed capsular structures.