Electronic Supplementary Material (ESI) for Biomaterials Science.

Supplementary material

Improved cell viability for large-scale biofabrication with photo-crosslinkable hydrogel systems through dual-photoinitiator approach

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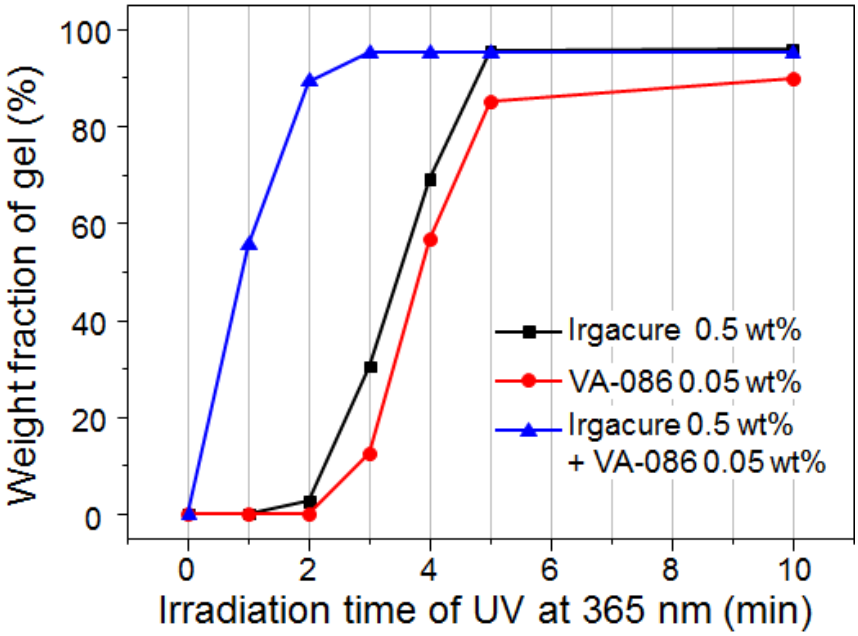

Figure S1. Weight fraction of PEGDA hydrogel as a function of UV irradiation time during PEGDA photocrosslinking with different photoinitiators. The 365 nm-UV lamp used for photo-crosslinking has irradiation intensity of ~19 mW/cm^2 on the top surface of the PEGDA specimens with volume of D 33.5 mm x H 8 mm. The weight fraction of PEGDA hydrogel during photo-crosslinking was calculated by using the equation, weight fraction (%) = weight of PEGDA gel x 100 / initial weight of PEGDA solution.

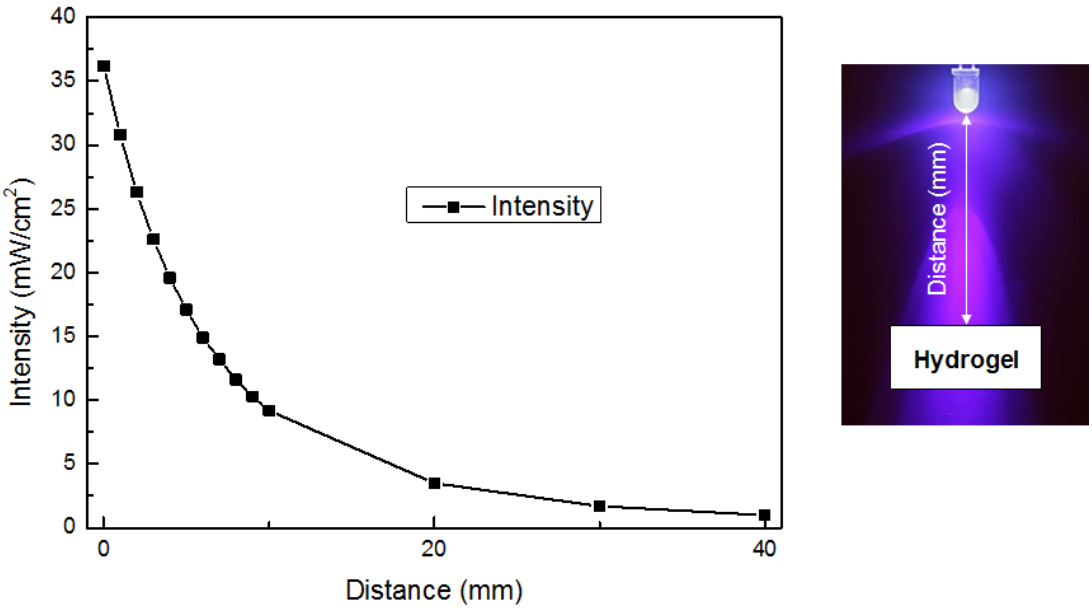

Figure S2. Representative intensity profile of 405 nm UV as a function of distance from the light source. We placed the PEGDA specimen at the distance of 10 mm from the blue light LED emitter for crosslinking of PEGDA, thus irradiation intensity on the top surface of PEGDA should be ~ 8 mW/cm^2.

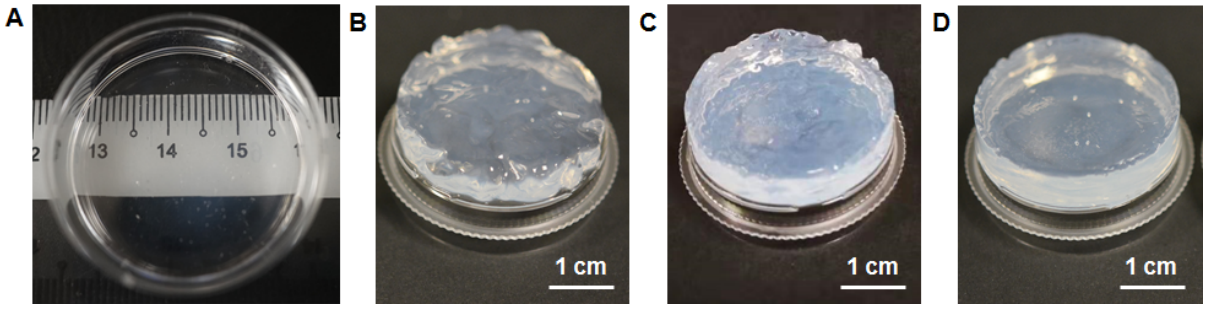

Figure S3. Picture of representative PEGDA hydrogels: (A) PEGDA solution with 0.5 wt% Irgacure or 0.05 wt % VA-086 at 405 nm blue light for 5 min, indicating that PEGDA is almost liquid (weight fraction of gel in PEGDA solution < 5%) , (B) and (C) PEGDA hydrogels after photocrosslinked with 0.5 wt% Irgacure 2959 and 0.05 wt% VA-086 at 405 nm UV for (B) 5 min (weight fraction of gel in PEGDA solution = ~ 60 %) and (C) 10 min (weight fraction of gel in PEGDA solution = ~ 85 %), and (D) PEGDA hydrogel after photocrosslinked with 0.5 wt% Irgacure 2959 and 0.05 wt% VA-086 at 365 nm UV for 5 min, with weight fraction of gel in PEGDA solution = ~ 95 %). For fair comparison, we used the same light intensity and spot size for UV and blue light sources. Both 365 nm-UV and 405 nm blue light LED emitters used for photo-crosslinking have irradiation intensity of ~8 mW/cm^2 on the top surface of the PEGDA specimens with volume of D 33.5 mm x H 8 mm.