

Supplementary Information [Video I; Video1 (H=10um).mp4]

Photopolymerization movie clip of thin sample (height 10 μ m). The movies were recorded with X50 speed using brightfield epi-illumination. This clip consists of three cases of exposure intensity: 1. Low exposure intensity. In this case, the UV illumination is not visible. Gelation starts on one surface and then grows in diameter in height. 2. Medium exposure intensity. The UV illumination is visible, but so bright that it obscures the growing polymer gel. With time the gel grows larger than the illumination diameter. The gel continues to grow after the UV illumination ceases. 3. High exposure intensity. Similar behavior to the previous case, but notice a pattern of dim waves radiating outward from the center of illumination at time 0:19 – 0:21 secs.

Supplementary Information [Video II; Video2 (H=100um).mp4]

Photopolymerization movie clip of thick sample (height 100 μ m). The movies were recorded with X10 speed using brightfield epi-illumination. This clip consists of two cases of exposure intensity: 1. Medium exposure intensity. The sample begins to grow as a solid, uniform cylinder and at time 0:02 seconds presses against the thin glass face of the sample cell. It continues to grow, but the end of the cylinder opposite to the direction of illumination becomes hollow. At 0:09 seconds the cylinder buckles and flips over on its side. 2. High exposure intensity. The gel is immediately hollow and appears as a bright ring. A dark zone surrounds the ring. We do not understand the origin of the contrast.