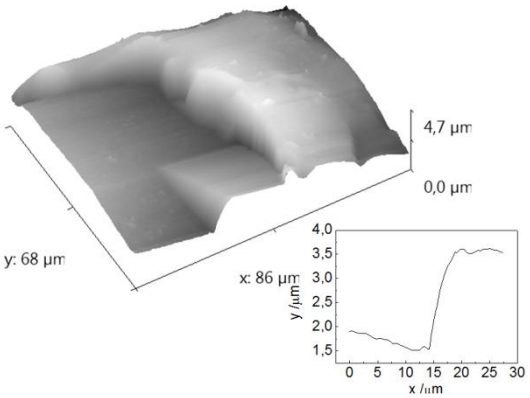

Fig.S1. AFM image of the mark left by the blade to determine the PNIPAM film thickness. Insert a profile of the topography.

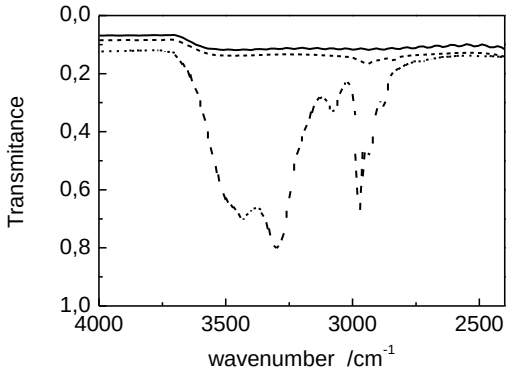

Fig.S2. FTIR spectra (4000-2200 cm^{-1}) of clear glass (solid line), MPTS modified glass (dotted line) and MPTES-PNIPAM glass (dashed line).

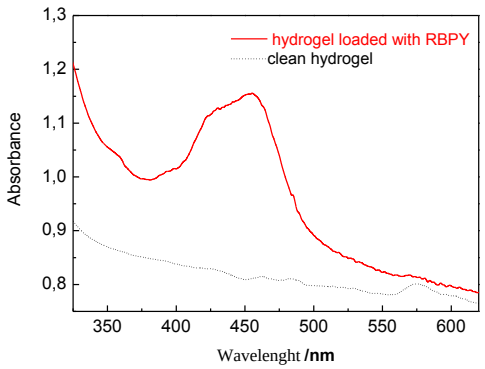

Fig.S3 UV-visible spectra of MPTS-PNIPAM on glass (dotted line) and MPTS-PNIPAM on glass loaded with RBPY (red full line).

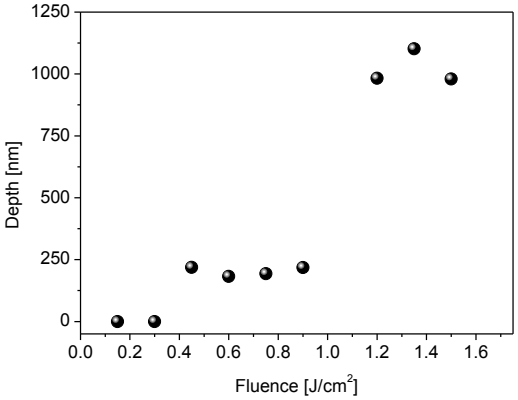

Fig.S4 Graph of the ablation depth, measured by AFM, as a function of laser fluence

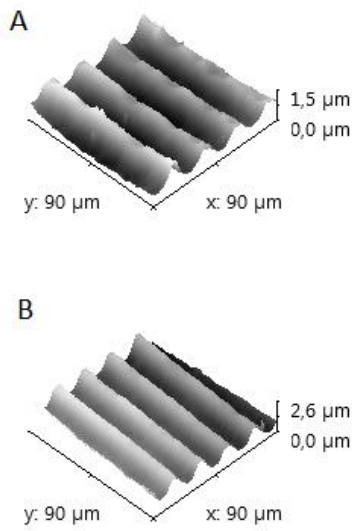

Fig.S5 AFM image of the patterns obtained at two different fluences above the threshold fluence A) 1.2 J/cm^2 y B) 1.35J/cm^2.

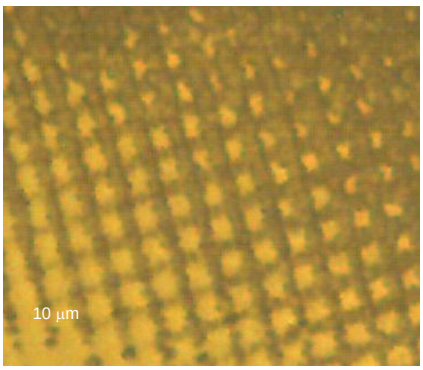

Fig.S6 Optical micrographs of a square pattern produced by DLIP of a doped hydrogel. The pattern ins produced using two successive pulses and rotating the sample 90° between pulses.

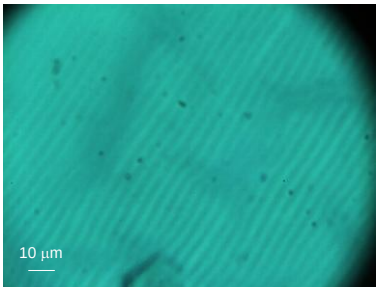

Fig.S7 Optical micrograph of a pattern produced by DLIP on a hydrogel. doped with methylene blue.

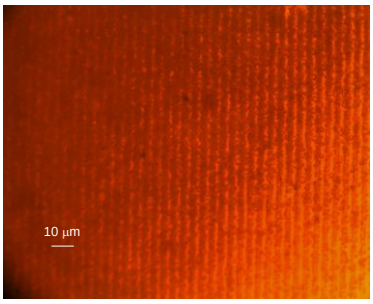

Fig.S8 Optical micrograph of a pattern produced by DLIP on a poly(acrylamide-co-acrylic acid) hydrogel doped with RBPY.

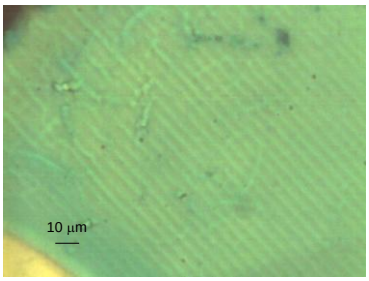

Fig.S9 Optical micrographs of a pattern produced by DLIP on a poly(N-isopropylacrylamide-co-(2%) acrylamidopropanesulfonic acid) hydrogel doped with methylene blue.