

Abstract Submitted
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Fabrication of Janus hydrogels with stiffness gradient using drop coalescence¹ DONGHEE LEE, KALE GOLDEN, SANGJIN RYU, University of Nebraska-Lincoln — The stiffness of the extracellular matrix (ECM) regulates cellular behaviors, and polyacrylamide (PAAM) gels with stiffness gradient have been used to simulate inhomogeneous ECM and to study the effects of the ECM stiffness on cells. Such hydrogel substrates with stiffness gradient can be fabricated with relatively complicated methods using microfluidics and moving masks. In our study, we develop a simpler method for fabricating Janus hydrogel which has a gradient of stiffness. Two prepolymer solutions were prepared for soft and stiff gel compositions, respectively, and one drop of each solution was placed on a hydrophobic patterned glass. Then, these two drops were gently squeezed by another glass being slowly lowered until coalescence, and gel polymerization was initiated after a certain time period for mixing. The motion of the drops was guided by the hydrophobic pattern. AFM nano-indentation showed that the fabricated Janus PAAM gels have a stiffness gradient which could be controlled by increasing mixing time.

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