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**Active substrates through controlled creasing of surface-attached hydrogels** JUNGWOOK KIM, RYAN HAYWARD, University of Massachusetts, Amherst — A hydrogel film confined to a rigid substrate may undergo a mechanical instability to form sharp creases on its surface when placed under compressive stress. We will describe how this instability can be harnessed to generate substrates with surface chemical patterns that can be dynamically hidden and displayed. We employ lithographically micro-patterned underlying substrates as a route to spatially control the formation of creases. Using surface-bound hydrogels composed of poly(N-isopropylacrylamide), we prepare temperature-responsive dynamic substrates, whose surface reversibly fold and flatten as temperature is changed. Finally, deposition of polyelectrolytes on the hydrogel surface is exploited as a way to selectively pattern the surface chemistry of the gel. We focus on the use of poly(ethylene glycol) grafted polyelectrolytes with and without the integrin-binding peptide (RGD) as a route to dynamically control cell-substrate interactions.

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