Creating Polymer Hydrogel “Hybrids” Combining Gels of Distinct Properties

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Objective: To create hybrids of multiple gels that are polymerized together yet retain their own distinct properties

Methods: By tuning the viscosity of pre-gel solutions (using either clay particles or the onset of polymerization), the pre-gels can be brought into contact without mixing, yet with sufficient interaction to polymerize together

Results: Hybrids have been created which combine gels with highly contrasting chemical, mechanical, optical, and stimuli-responsive properties

Future Work: One potential application which has shown promise is a spinal disc replacement hybrid which fuses a soft inner-core gel with a firm outer shell gel

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