

Hybrid hydrogels can mimic the exceptional stiffness of tough native tissues (e.g., articular cartilage). However, many of these tough hybrid hydrogels currently lack tissue regeneration potential. Therefore, our work focuses on modifying tough poly(acrylamide-co-acrylic acid)/alginate hybrid hydrogel networks with bioactive moieties. These modifications potentially allow for effective tissue interactions with the extracellular matrix of articular cartilage. Mechanical testing showed that our modified hybrid hydrogels can be tuned to achieve a comparable compressive stiffness to that of native articular cartilage tissue. These results suggest the hydrogels' potential as tough cartilage mimics and support their additional investigation in vitro.