

Abstract Submitted  
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**Synthesis of a novel photopolymerized nanocomposite hydrogel for the treatment of acute mechanical damage to cartilage** KATHRYN SCHLICHTING, Department of Materials Science and Engineering, Iowa State University, TRISHELLE COPELAND-JOHNSON, Department of Chemical Engineering, University of South Florida, MATTHEW GOODMAN, Department of Materials Science and Engineering, Iowa State University, ROBERT LIPERT, Institute for Combinatorial Discovery, Iowa State University, TODD MCKINLEY, JAMES MARTIN, Department of Orthopaedic Surgery and Rehabilitation University of Iowa, SURYA MALLAPRAGADA, Department of Chemical and Biological Engineering, Iowa State University, ZHIQUN LIN, Department of Materials Science and Engineering, Iowa State University — Posttraumatic osteoarthritis is caused by a cascade of pathobiologic and pathomechanical events starting with intraarticular fractures in the cartilage. Currently, treatment of fractures is completely focused on restoration of the macroanatomy of the joint. The premise is that restoring the macroanatomy will prevent ongoing stresses and in turn prevent cartilage degeneration. However, current treatment ignores acute mechanical damage sustained by cartilage at the time of injury. This study describes the initial development of a novel nanocomposite photopolymerizing copolymer that has potential to restore local structural integrity to acutely injured cartilage, and subsequently act as a carrier for chondrocyte-enhancing bioactive agents.

Kathryn Schlichting  
Department of Materials Science and Engineering, Iowa State University

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