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The Rheological Properties of the Biopolymers in Synovial Fluid WENDY E. KRAUSE, REBECCA R. KLOSSNER, Fiber and Polymer Science Program, North Carolina State University, JULIE WETSCH, Polymer and Color Chemistry Program, North Carolina State University, KATHERINE M. N. OATES, RALPH H. COLBY, Materials Science & Engineering, The Pennsylvania State University — The polyelectrolyte hydronic acid (HA, hydronan), its interactions with anti-inflammatory drugs and other biopolymers, and its role in synovial fluid are being studied. We are investigating the rheological properties of sodium hyaluronate (NaHA) solutions and an experimental model of synovial fluid (comprised of NaHA, and the plasma proteins albumin and  $\gamma$ -globulins). Steady shear measurements on bovine synovial fluid and the synovial fluid model indicate that the fluids are highly viscoeleastic and rheopectic (stress increases with time under steady shear). In addition, the influence of anti-inflammatory agents on these solutions is being explored. Initial results indicate that D-penicillamine and hydroxychloroquine affect the rheology of the synovial fluid model and its components. The potential implications of these results will be discussed.

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