Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

A constitutive theory for visco-hyperelastic gels
SHAWN CHESTER, Lawrence Livermore National Laboratory — Many gels operate in chemically saturated environments in a variety of applications. Most constitutive theories for gels are formulated using large deformation hyperelasticity coupled with fluid transport. However, in most cases the mechanical response of such gels show hysteresis and other dissipative effects which are not accounted for in present constitutive theories. We have recently developed a three dimensional continuum level theory to describe the coupled fluid permeation and large deformation response of visco-hyperelastic materials. In this work, we apply our theory and numerical simulation capability to study the indentation response among others of visco-hyperelastic gels.

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Date submitted: 09 Nov 2011 Electronic form version 1.4