Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The "jammed state" of a simulated transient polymeric network[1]
ARLETTE BALJON, San Diego State University, JORIS STEGEN, TU Eindhoven, JORIS BILLEN, MARK WILSON, San Diego State University, AVINOAM RABINOVITCH, Ben-Gurion University of the Negev — Novel hybrid Molecular Dynamics/Monte Carlo simulations are employed to study transient polymeric networks – e.g. hydrophilic polymers with hydrophobic endgroups – computationally. Endgroups of short polymeric chains form junctions that continuously form and break over time. When the temperature is lowered, the probability that a junction breaks decreases. Below a critical temperature the system jams: it stops flowing and exhibits a yield stress under an applied shear. We will report on the underlying topological changes that occur in the polymeric network at this transition point. We will also discuss the behavior of the system under the influence of external stress. Results will be compared with observations in other jammed systems.

[1]This work was supported by a grant from the NSF under Grant No. DMR0517201

Joris Stegen
TU Eindhoven

Date submitted: 19 Nov 2009 Electronic form version 1.4