Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Side Chain Effects on the Structure and Dynamics of PPEs in different Complex Fluids YUNFEI JIANG, DVORA PERAHIA, Chemistry Department, Clemson University, Clemson, SC, 29634, YIQING WANG, UWE H. F. BUNZ, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA 30332 — Poly (para phenyleneethynylenes) (PPEs) are electro-optically active macromolecules with immense potential in organic electro-optical devices. The polymer backbones are substituted by side chains that affect their conformation, association modes and dynamics. Consequently, they modify the optical response of the polymer. The present work introduces a small angle neutron scattering (SANS) and neutron spin echo (NSE) measurement of PPE substituted with a bulky triisopropylsiloxyl (TIPS) side chain in toluene. The results are compared with those previously obtained results of alkyl substituted PPEs. While alkyl substituted PPEs interacts via pi-pi stacking and forms a fragile gel, TIPS-PPE associates predominantly via the side chains and forms a stable gel over a large temperature range. The dynamics of PPEs in gel includes both fast and slow components and a cooperative dynamics between the solvent and PPE molecules.

Yunfei Jiang
Clemson University

Date submitted: 27 Nov 2007

Electronic form version 1.4