Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

On the Glass Transition in Polystyrene-TiO2 Nanocomposites
JORGE ALARCON, DORINA M. CHIPARA, KAREN LOZANO, MIRCEA CHIPARA, The University of Texas Pan American, ALIN CRISTIAN CHIPARA, ROBERT VAJTAI, PULICKEL M. AJAYAN, Rice University, THE UNIVERSITY OF TEXAS - PAN AMERICAN COLLABORATION, RICE UNIVERSITY COLLABORATION — Nanocomposites of atactic polystyrene (PS) filled with TiO2 nanoparticles of about 15 nm have been prepared. A dilute solution of PS in a good solvent (chlorophorm) has been prepared by stirring the components at room temperature for 24 h at 500 rotations per minute. The solution was then sonicated for 5 minutes by using a high power sonicator. TiO2 nanoparticles were added in the sonicating bath and the sonication continued for 1 hour in order to achieve an uniform dispersion on nanoparticles. Then, a non solvent (distilled water) has been suddenly added under sonication. The sonication continued for about 30 minutes. After 30 minutes, the polymer nanocomposite was isolated from the liquid mixture by filtration. The residual amount of solvent and water was removed by placing the nanocomposites into a vacuum oven at 100 C for 12 hours. The complete removel of water and solvent was confirmed by TGA. The as obtained samples were measured by Differential Scanning Calorimetry and the effect of TiO2 on the glass transition temperature was investigated. The effect of TiO2 on the glass transition of PS is discussed.

Mircea Chipara
The University of Texas Pan American

Date submitted: 15 Nov 2013 Electronic form version 1.4