Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Nano-indentation of Polycarbonate and Diamine Blends SURESH AHUJA, Retired — Nanoindentation of complex surfaces is of great interest from academic and industrial point of view. There are unique properties such as indentation effects resulting in strain softening and strain hardening. There is a differentiation in structure with the depth exhibited with variation of Tg. Hertzian and non-linear deformation models including usage of FEM offer opportunity in analyzing nano-indentation. In polycarbonate, the effective elastic modulus and the hardness decreases as the applied load is increased. As the hold time was increased, the effective elastic modulus and the hardness also decreased. The contact stress increases as the contact strain rate is increased. Presence of diamine(MTBD) in polycarbonate results in making the surface and bulk brittle and acts as an anti-plasticizer by increasing it modulus and reducing yield stress (hardness) and strain to break. Data on modulus and hardness of polycarbonate and blends of diamine as function of depth (strain) and strain rate are presented and compared with those of composites with silica.

Suresh Ahuja
Retired

Date submitted: 12 Dec 2011 Electronic form version 1.4