

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Aging and structural recovery behaviors in epoxy films subjected to carbon dioxide plasticization jumps: Evidence for a new glassy state**

GREGORY MCKENNA, SHANKAR SUBRAMANIAN, JING ZHAO, MATAZ AL-COUTLABI, LAMECK BANDA, Texas Tech University — Structural recovery and physical aging of glassy polymers after temperature jumps have been very well studied in the literature. On the contrary, there is only limited work available on the aging and recovery behaviors of glassy polymers subjected to plasticizer jumps. We have shown in our previous works, using strong and weakly polar plasticizers that qualitatively they mimic the behaviors of temperature jumps but quantitatively they are different [1, 2]. In this work, we further investigate this anomalous behavior by studying the structural recovery and physical aging of an epoxy film subjected to carbon dioxide pressure jumps and compare the results with temperature jump experiments such that the final conditions are identical. The results are surprising and we observe evidence for existence of a new glassy state.

[1] Zheng. Y., and McKenna, G.B., *Macromolecules*, **36**, 2387-2396, 2003

[2] Alcoutlabi, M., Briatico-Vengosa, F., and McKenna, G.B., *JPSB.*, **40**, 2050-2064, 2002

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Date submitted: 23 Nov 2010

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