Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

**Structural changes of semicrystalline polyolefin block copolymer elastomers during step cycle mechanical processing** FANNY DEPLACE, ZHIGANG WANG, MC-CAM and the Departments of Materials and Chemical Engineering, University of California, Santa Barbara, CA, PHILIP HUSTAD, JUAN TIAN, JEFFREY M. ROSE, GEOFFREY W. COATES, Departments of Chemistry and Chemical Biology, Cornell University, NY, FUMIHIKO SHIMIZU, Mitsubishi Chemical Group, Science and Technology Research Center, Japan, SHIGEYUKI TOKI, LIXIA RONG, JIE ZHU, BENJAMIN S. HSIAO, SUNY Stony Brook, Department of Chemistry, Stony Brook, NY, GLENN H. FREDRICKSON, EDWARD J. KRAMER, MC-CAM and the Departments of Materials and Chemical Engineering, University of California, Santa Barbara — Development of stereo- and regioselective catalysts has led to the capability to produce multiblock copolymers with crystalline isotactic or syndiotactic polypropylene blocks and ethylene-r-propylene rubbery blocks which have excellent elastomeric properties. During step cycle mechanical processing the crystals can plastically deform and transform from lamellae into rod-like fibrils. The stress-strain tensile curves provide evidence of dramatic changes in the mechanical properties and small angle and wide angle X-ray scattering experiments as well as real space imaging bring a better understanding of the structural changes of the crystals during such processing.

Fanny Deplace
MC-CAM and the Departments of Materials and Chemical Engineering,
University of California, Santa Barbara, CA

Date submitted: 04 Nov 2009 Electronic form version 1.4