

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Polymer crystallization in gratings prepared by Nanoimprint Lithography as revealed by Atomic Force Microscopy and Grazing Incidence X-ray Scattering** T. A. EZQUERRA, IEM-CSIC, M. SOCCIO, Università di Bologna, D.E. MARTINEZ-TONG, DIPC & Centro de Física de Materiales (CSIC-UPV/EHU), N. ALAYO, IREC, M.C. GARCIA-GUTIERREZ, IEM-CSIC, F. PEREZ-MURANO, IMB-CNM (CSIC, N. LOTTI, A. MUNARI, Università di Bologna — Nanostructured gratings of semicrystalline polymers like poly(propylene azelate) (PPAz) or of ferroelectric copolymers of vinylidene fluoride(VDF) and trifluoroethylene(TrFE) have been prepared over spin-coated thin films by Nanoimprint Lithography (NIL). The structure and morphology of the gratings have been investigated by combining Atomic Force Microscopy (AFM) and Grazing Incidence X-ray Scattering at small angle (GISAXS) and wide angle (GIWAXS). The results reveal that NIL affects significantly the orientation of the crystalline lamellae. In both cases gratings are more abundant in edge-on lamellae than the reference non-printed films. For PPAz we attribute this effect to the preferential crystallization as flat-on lamellae on silicon surfaces either the stamp trench walls or the substrate surface. Thus, the flat-on lamellae on the trench walls appear to be edge-on lamellae in the printed sample. These results further support NIL as an appropriate procedure in order to control polymer crystal orientation.

Tiberio Ezquerra  
IEM-CSIC

Date submitted: 13 Apr 2017

Electronic form version 1.4