

**NINTH ANNUAL CONFERENCE OF THE YUGOSLAV MATERIALS
RESEARCH SOCIETY**

YUCOMAT 2007

Hotel "Plaža", Herceg Novi, Montenegro, September 10–14, 2007
<http://www.yu-mrs.org.yu>



Programme and The Book of Abstracts

Organised by:
**Yugoslav Materials Research Society,
Faculty of Metallurgy and Technology, Podgorica**
and
**Institute of Technical Sciences of the
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P.S.A.36

ORIENTATION-INDUCED CHANGES IN MICROSTRUCTURE AND CRYSTALLINITY OF DIFFERENT PEs

D. Miličević, A. Leskovac, M. Mitrić, E. Suljovrujić
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This paper studies the influence of orientation on polyethylenes (PEs) with different structural peculiarities in accordance with Peterlin's molecular model of drawing. For this reason, low density polyethylene (LDPE), linear low density polyethylene (LLDPE) and high density polyethylene (HDPE) were oriented via solid-state stretching at an elevated temperature. In order to investigate orientation-induced changes in morphology, surface microstructures were analyzed by optical (OM) and scanning electron microscopy (SEM). Differential scanning calorimetry (DSC) and wide-angle X-ray diffraction (WAXD) measurements were used to determine changes in crystallinity. The presented results reveal a two-stage evolution of crystallinity (of pristine PEs) due to orientation; the first stage is characterized by a significant increase in crystallinity, following saturation occurs with a further increase of the draw ratio at the second stage. The critical draw ratio, which separates these two stages and corresponds to the transformation from the initial to the developed fibrillar structure, was influenced by the structural peculiarities of each PE.

P.S.A.37

THE STUDY OF NUCLEATION OF SECONDARY PHASE IN GLASS WITH PRIMARY CRYSTALLIZATION

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In this paper the results of investigation of aluminosilicate glass which crystallize by primary crystallization. In the case of primary crystallization, the composition of the crystal phases is different than that of parent glass. The results of investigation shown, that leucite as primary phase, and diopside as secondary one were nucleated heterogeneously. The secondary phase phlogopite shown homogenous mechanism of nucleation. By using DTA method for study of such complex nucleation process was shown that crystallisation peak temperature T_p and crystallisation peak height $(\delta T)_p$ are time functions of previous heat treatment of the sample. The heat treatment for the time which corresponds to the maximum of DTA parameters enables the complex curve of T_p i $(\delta T)_p$ change as the function of nucleation temperature of this glass to be obtained. Also, this enables to study the nucleation of phlogopite as secondary crystalline phase.