

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Density structure of polymers in the layered host system: the effect of the excluded volume.**<sup>1</sup> ALEXANDER CHERVANYOV, GERT HEINRICH, Leibniz Institute for Polymer Research Dresden, Hohe Str. 6, 01069 Dresden, Germany — We theoretically investigate the density structure of homo-polymers placed inside the host system of alternating layers that have different affinity for polymers. The exact solutions are obtained for the two-point propagator, monomer number density and average Flory radius of the ideal Gaussian polymers immersed in this periodic host structure. For the case where the excluded volume interactions are taken into account, the approximate counterparts of the above exact solutions are found. Based on the comparison of the obtained solutions, the effect of the excluded volume is found to qualitatively change the behaviour of the number density and Flory radius of polymers calculated as a function of the average affinity of the layers and the periodicity of the layered host. The effects (e.g. ‘polymer localization’) of a small number of defects that disturb the perfection of the layered host on the structure of polymers placed in this host are investigated.

<sup>1</sup>Financial support from DFG, SFB287 is gratefully acknowledged

Alexander Chervanyov  
Leibniz Institute for Polymer Research Dresden,  
Hohe Str. 6, 01069 Dresden, Germany

Date submitted: 28 Nov 2006

Electronic form version 1.4