Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Adhesion of Blended Polymer Films.[1] CHRISTOPHER STASZEL, SUMAN SINHA-RAY, ALEXANDER L. YARIN, Univ of Illinois - Chicago, BEHNAM POURDEYHIMI, The Nonwovens Institute — The adhesive energy of blended and monolithic PCL and PCL-N6 surfaces was measured by blister method and linked to the surface composition of the blended samples. It was shown that PCL does not adhere to N6 after heat-treatment at 55 C, while the monolithic PCL films adhered to the blended samples solely via the PCL islands at the surface. The surface concentration of PCL in the blended samples was established using the novel staining method. It was shown that the surface concentration of PCL differs from its bulk content in the blended samples. The measurements also revealed that the surface concentration of PCL is practically linearly proportionality to the normalized adhesion energy between the blended PCL-N6 samples and monolithic PCL films. Several statistical characteristics of the surfaces of the blended samples were used to characterize their uniformity/non-uniformity. It was shown that increasing the surface uniformity of the adhering component in the blended samples (PCL), one increases the adhesion energy. Moreover, at about 70% of PCL at the surface, the adhesion energy of blended samples to monolithic PCL films could reach the value characterization of the adhesion between two monolithic PCL samples.

[1]This work is supported by the Nonwovens Institute, grant No. 14-163

Christopher Staszel
Univ of Illinois - Chicago

Date submitted: 01 Nov 2016 Electronic form version 1.4