

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Electric Field Effect on Adhesion of Poly(ethylene oxide) Physical Hydrogels VICTOR BARINOV, BILAL MARIE, Polytechnic Institute of New York University — The objective of this study was to characterize the effect of electric field on adhesion of poly(ethylene oxide) physical hydrogels to an aluminum substrate. The normal load necessary to disbond two plain aluminum surfaces joined by a thin layer of a poly(ethylene oxide) physical hydrogel can be reduced by about at least one order of magnitude if a reduced normal load is applied to aluminum-hydrogel interfaces simultaneously with an electric potential difference. Two aluminum surfaces joined by the hydrogel serve as a cathode and an anode. The current densities of about ten amperes per square meter determine the tenths-of-watt power dissipated in a sample. The effect of electric field on the adhesion strength of poly(ethylene oxide) hydrogels to aluminum depends on polymer concentration.

Victor Barinov
Polytechnic Institute of New York University

Date submitted: 13 Nov 2011

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