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Polymer monolayer – substrate adhesion strength MOSHE GOTTLIEB, HAIM DVIR, Ben-Gurion University — Polymer monolayers have been deposited on several chemically different solid substrates. The substrates ranged from hydrophobic to hydrophilic and from chemically inert to highly reactive. In addition few of the surfaces were also exposed to ionizing irradiation. The extent of surface coverage and surface topology were experimentally determined for the different surfaces and polymers. The adsorbed layer thickness was determined optically. The strength of polymer interaction with the substrate was investigated using contact-mode Atomic Force Microscopy. Typically, for each polymer a characteristic layer thickness was measured irrespective of the nature of the surface or strength of adhesion. Adhesion strength was attributed mainly to van der Waals interactions with no indications of large scale covalent bonding between the polymer and the surface even for highly reactive surfaces. Hydrophobic interactions, surface topology, and initial conditions existing during film deposition seem to dominate the interaction between the polymer and the substrate.

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