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Switchable Adhesion Properties From Low and High T_g Polymeric Brushes HARIS RETSOS, YVETTE TRAN, E.S.P.C.I., PARIS, GANNA GORODYSKA, ANTON KIRIY, MANFRED STAMM, I.F.P. Dresden, Germany, COSTANTINO CRETON, E.S.P.C.I., PARIS — We investigated the adhesive properties of mono-component and bi-component polymeric brushes chemically grafted on silicon wafers from end-functionalized hydrophilic and/or hydrophobic chains by using the technically simple 'grafting to' method. The charge state and the molecular organization of high T_g brushes could be varied reversibly by exposure to appropriate solvents or by varying the grafting density. Adhesive properties were tested against soft pressure-sensitive-adhesives (hydrophobic & hydrophilic) with a probe method. In the case of low T_g brushes, an increase in contact time could selectively improve the adhesion with the soft hydrophobic or hydrophilic adhesive layer. This is due to reorganization of the interface at the molecular scale leading to the formation of entanglements or favorable interactions between the polymer brush and the polymers in the soft adhesive.

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