

2. Adhesion of homo- and hetero-complimentary polymers [PDF-2]

Adhesion phenomena are of great importance in many scientific and technical fields. Many applications of polymers rely on homo-complimentary attractions (between two identical polymers) and on hetero-complimentary attractions (between chemically different polymers or between a polymer and a non-polymer). Hence for adhesion between polymers, an aim of adhesion science has been to gain an understanding of the processes that occur at a molecular level and the relations between these processes and the macroscopically measured interface toughness. In the present work, poly(n-butyl acrylate) and poly(benzyl methacrylate) are synthesized. The ultimate aim of this work is to introduce additional specific interactions (hydrogen bonding) into these polymers to understand the role of these interactions on rheology, diffusion, adhesion and phase behavior. So, it is of interest to first study the mechanical and adhesion properties of these polymers. Two experimental tests are specially devoted to measure the level of adhesion: (i) by contact mechanics tests and (ii) by peel tests. The two types of adhesion behaviors are compared to better understand bulk and surface properties of these polymers on contact with themselves and/or with another material.

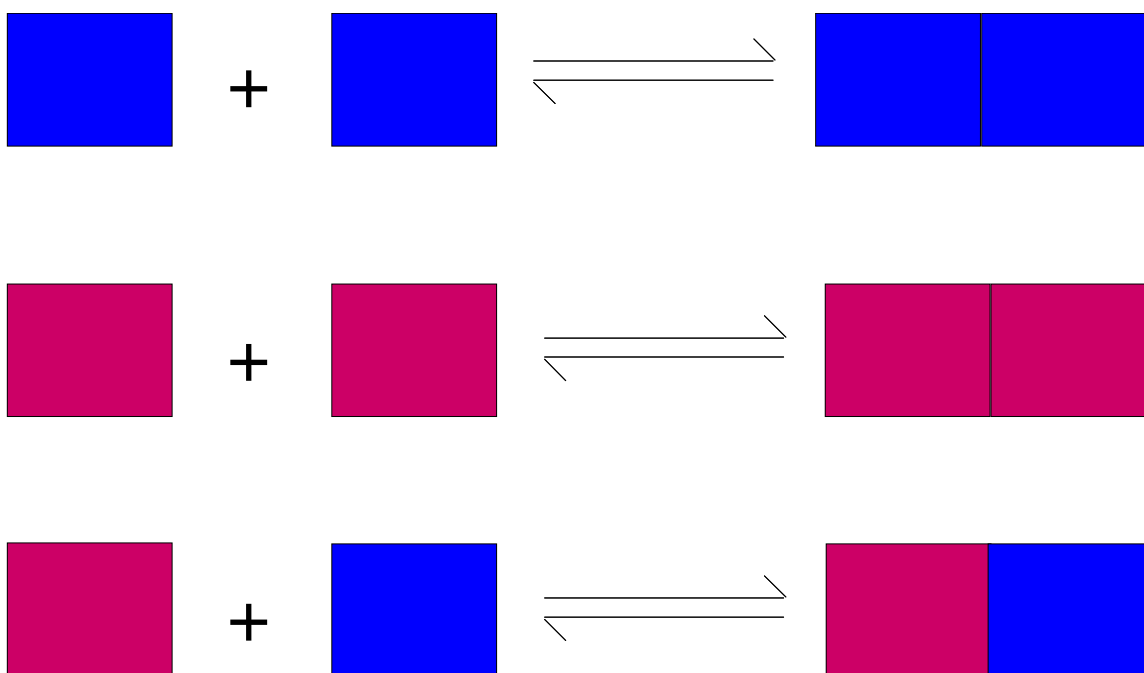


Figure. General strategy for the reversible bonding bases on homo-complimentary (same color) and hetero-complimentary (different color) attractions.