

Synthesis of Crosslinkable Core-Shell Latexes for Use as Water-Borne Pressure-Sensitive Adhesives

Peter. A. Lovell, Andrew B. Foster and Michael A. Rabjohns

School of Materials, The University of Manchester, Grosvenor Street, Manchester, M1 7HS, United Kingdom

Water-borne pressure-sensitive adhesives with improved properties that can compete with solvent-based adhesives are desirable, especially from environmental considerations. The approach of this research was to synthesise latex particles using mixtures of acrylates, styrene and functional monomers. Monomer-starved semi-batch emulsion polymerisation was used to enable controlled synthesis of core-shell particles. Functional monomers were included in the shell to facilitate inter-particle crosslinking during film formation and, ideally, produce a crosslinked phase within the film, adding cohesive strength to the soft dissipative phase formed by the particle cores. A series of latexes with this structure was synthesised. Latexes were prepared with variation of core:shell ratio, amounts of chain transfer agent added in core and shell, and shell monomer composition.