

Study on Droplets Formation Process of Polymer-Encapsulated Super-Fine Disperse Dye Ink

ZHANG Guifang, FU Shaohai^{1*}, TIAN Anli ; Key Laboratory of Eco-Textile, Jiangnan University, Ministry of Education, Wuxi, Jiangsu 214122, China

Abstract

The polymer-encapsulated nanoscale disperse dye ink was prepared by phase separation technique using copolymer of styrene and maleic anhydride. The effects of glycerin and Tween80 on colloidal properties and droplets formation process of polymer-encapsulated nanoscale disperse dye ink were investigated. FTIR and TEM suggested that the disperse dye was encapsulated by copolymer successfully. The polymer-encapsulated nanoscale disperse dye ink had excellent stability, the viscosity increased with an increasing glycerin, and the surface tension

decreased with an increase of amount of Tween80. Either viscosity increasing or surface tension reducing made the droplets break easily. In addition, the maximum volume of droplet would reduce with decreasing surface tension. Viscosity might be the main factor to control the “satellite droplet” forming, and the “satellite droplet” was increased when the viscosity was lower.

Key words: polymer-encapsulated nanoscale disperse dye ink; Viscosity, Surface tension, Droplets