



## An innovative SA/PVP hybrid for attaining water repellent cotton/polyester blended fabric

H.M. Fahmy<sup>1</sup>, A.A. Aly<sup>1</sup>, A. Amr<sup>1</sup>, Sh.M. Sayed<sup>1</sup> and A.M. Rabie<sup>2</sup>

<sup>1</sup>National Research Centre; Textile Research Division, 33 Bohouth st.( former El Tahrir st.) Dokki - Giza - Egypt- P.O. 12622. Scopus affiliation ID 60014618

<sup>2</sup>Faculty of Science, Ain Shams University, Cairo, Egypt, P.O. 11566.

**Abstract:** A novel SA/PVP hybrid was synthesized by the reaction of a high concentrated aqueous solution of poly (N-vinyl-2-pyrrolidone) (PVP) with stearyl alcohol (SA) in presence of ammonium persulfate (APS). Results obtained demonstrate that the optimum reaction conditions to synthesis that hybrid is PVP molecular weight (40000 Dalton), PVP concentration (60%), APS/PVP weight ratio (50%), PVP/SA weight ratio (20%), reaction time (55 min) and reaction temperature (80 °C). Upon dispersing that hybrid in water a stable white emulsion was obtained. Moreover, padding cotton/polyester blended fabric in finishing bath containing 60 g/l of the hybrid emulsion as well as 60 g/l of DMDHEU as crosslinker followed by drying at 100 °C/5 min and curing at 150 °C/3 min acquires the finished fabric water repellency rating of 80. On the other hand, the prepared SA/PVP hybrid was characterized by investigation of its IR spectrum as well as the TEM image of its emulsion. Meanwhile, the Scanning Electron Microscope images of untreated and hybrid emulsion treated fabric were investigated.

**Keywords:** Polyvinyl pyrrolidone; stearyl alcohol; water repellent fabric; textile finishing.

A.A. Aly *et al* /Int.J. ChemTech Res. 2016,9(3),pp 215-227.

\*\*\*\*\*