



## Synthesis of poly (N-vinyl-2-pyrrolidone)/pyrodextrins adducts and their utilization in functionalization of cotton fabric

H.M. Fahmy, A.A. Aly and Z.E. Mohamed

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

**Abstract :** Poly (N-vinyl-2-pyrrolidone)/British Gum (PVP/BG) and Poly (N-vinyl-2-pyrrolidone)/Dexy84 (PVP/D84) adducts were prepared by polymerization of high concentrated aqueous solution of N-vinylpyrrolidone (VP) under different polymerization conditions in presence of two pyrodextrins namely British Gum and Dexy84 respectively as well as ammonium persulphate as an initiator. Upon the percent total conversion values, the prepared water-soluble PVP/BG hybrid with the total conversion of 99.2% was selected to be characterized via investigating its IR analysis. Treating cotton fabric with different easy care finishing formulations containing dimethyloldihydroxy ethylene urea as crosslinker and different concentrations of PVP/BG adduct imparts that fabric with stiffness properties. Furthermore, incorporation of TiO<sub>2</sub> or Ag nano-particles in the aforementioned finishing bathes results in durable stiffness as well as antibacterial properties of treated fabric.

**Keywords:** Pyrodextrins; British Gum; N-vinylpyrrolidone; Grafting; Functionalization.