

# Photo-grafting Dyeing of Wool Fabrics with $\alpha$ -bromoacrylamide reactive dye

Yuanyuan Dong and Jinho Jang

Department of Nano-Bio Textile Engineering, Kumoh National Institute of Technology

## 반응성 염료를 이용한 양모직물의 광그라프트 염색

동위엔위엔, 장진호

금오공과대학교 나노바이오텍스타일공학과

E-mail : jh.jang@kumoh.ac.kr

Lanasol dyes containing  $\alpha$ -bromoacrylamide or  $\alpha,\beta$ -dibromopropionylamide group are used for wool dyeing. They are normally applied to wool under pH 4.5 to 6.5 at 100°C. Although wool fabric can be dyed to obtain deep colour, high light and wet fastness, the dyeing processes need long dyeing time at high temperature, with salt addition, which inevitably causes environmental problems.

Grafting is a modification method for textile where monomers are covalently bonded onto the polymer chain. It can be initiated by ozone,  $\gamma$  rays, electron beams, plasma, corona discharge and UV irradiation. Coloration by UV-induced photografting exhibits several advantages such as fast reaction rate, energy saving, simple equipment, easy exploitation and environmentally friendliness. Also it requires much lower energy compared to the conventional dyeing and less damage to the substrate. In this study, a direct sequential UV-induced photografting onto wool fabrics was discussed. To understand the graft polymerization mechanism further, several characterization methods were used. Moreover, the effects of several principal factors on the graft photopolymerization were investigated. Furthermore, the colorfastness results were compared with conventional dyeing methods.

1. F. C. Loh, K. L. Tan, E. T. Kang, K. G. Neoh, M. Y. Pun, Near-U.V. Radiation Induced Surface Graft Copolymerization of Some O<sub>3</sub>-Pretreated Conventional Polymer Films, *European Polymer Journal*, **31**, 481-488(1995).

## Acknowledgement

This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education, Science and Technology(2010-0023308).