

## Acknowledgment

The author would like to thank Fundamental Research Funds for the Central Universities XDJK2010C012 for their financial support.

## References

1. Wu G., *High molecular materials processing technology*. 2000, Beijing: China Textile & Apparel Press.
2. Lewin M., *Handbook of fibre chemistry*. 3<sup>rd</sup> ed ed. *International Fibre Science and Technology*. 2006, New York: CRC Press.
3. Wang J., *Principle of dyeing and finishing*. 1984, Beijing: China Textile & Apparel Press.
4. Savarino P., et al., *Reactivity and effects of cyclodextrins in textile dyeing*. *Dyes and Pigments*. Vol. 42, 1999, pp. 143-147.
5. Wang J., Cai Z.; *Incorporation of the antibacterial agent, miconazole nitrate into a cellulosic fabric grafted with  $\beta$ -cyclodextrin*. *Carbohydrate Polymers*, Vol. 72, 2008, pp. 695-700.
6. Wang C.X., Chen S.L.; *Aromachology and its application in the textile field*. *Fibres & Textiles in Eastern Europe*, 2005. Vol. 13, No. 6(54) pp. 41-44.
7. Liu B. H., Hu J. L.; *The application of temperature-sensitive hydrogels to textiles: A review of chinese and Japanese investigations*. *Fibres & Textiles in Eastern Europe*, 2005. Vol. 13, No 6(54), pp. 45-49.
8. Lu M., et al.; *Modifying Method of Multi-hydroxyloligomers Grafting on Vinylon*, S.i.P.O.o.t. P.R.C, Editor. 2009, China. p. 5.
9. Xiang J.; *Experimentation of Dyeing and Finishing*. 2002, Beijing: China Textile & Apparel Press.
10. Wang P. Y., Ma J.F.; *The kinetics of the dyeing and fading of coloured poly(ethylene-2,6-naphthalenedicarboxylate) fibre*. *Dyes and Pigments*. Vol. 37, 1998 pp. 121-127.
11. Cegarra J., Puente P.; *Considerations on the kinetics of the dyeing process of polyester fibres with disperse dyes*. *Textile Research Journal*. Vol. 37(5), 1967 pp. 343-350.
12. Marcincin A., Ujheliyova A., Marcincinova T.; *Fibre-forming blends of polypropylene and polyethylene terephthalate*. *Macromolecular Symposia*. Vol. 176, 2001, pp. 65-72.
13. Crank J., Park G.; *Diffusion in polymers*, London 1968, Academic Press.
14. Peters R.; *The physical chemistry of dyeing*. *Textile chemistry*. Amsterdam 1975, Elsevier Scientific Publishing Company.

## Technical University of Lodz Faculty of Material Technologies and Textile Design

### Department of Physical Chemistry of Polymers

The research activity of the Department is focused on areas related to the chemistry and physical chemistry of polymers. The main directions of scientific activity are as follows:

- investigation of the polyreaction process, in particular matrix polymerisation,
- physico-chemical characteristics of polymers and copolymers,
- study of the relationship between their structure and properties,
- synthesis of multimonomers,
- chemical modification of synthetic and natural polymers in order to obtain products with specific properties,
- copolyesters of chitin a new bioactive materials for medical applications,
- surface modification of textile materials by deposition of polyelectrolyte nanolayers.

The Department has at its disposal the following modern measuring techniques for the physical and chemical analysis of polymers:

- gel permeation chromatography equipment, consisting of a Waters Alliance separation module and multiple detector system: refractive index, UV-VIS, intrinsic viscosity and right angle laser light scattering;
- FTIR spectrometer system 2000 from Perkin-Elmer with data collection and processing software;
- UV-VIS spectrometer Lambda 2 from Perkin-Elmer;
- differential scanning calorimeter DSC7 from Perkin-Elmer;
- thermobalance coupled with an infrared spectrometer from Perkin-Elmer.

Theme cooperation: research of the surface modification of textiles using polyelectrolyte nanolayers (Lebinez Institut für Polymerforschung, Dresden, Germany); chitin derivatives and their applications (National Institute of Agrobiological Sciences + NIAS, Tsukuba, Japan).

The Department's staff conduct classes on a variety of topics at all levels of education at the Faculty of Material Technologies and Textile Design. These classes cover subjects such as chemistry, the physical chemistry of polymers, instrumental methods in the physico-chemical characterisation of polymers, polymer materials, etc.

For more information please contact:

Department of Physical Chemistry of Polymers  
Technical University of Lodz

ul. Zeromskiego 116, 90-924 Lodz, Poland

tel.: (48)(42) 631-33-60 e-mail: rojan@p.lodz.pl web site: <http://www.k41.p.lodz.pl/>

Received 03.12.2010 Reviewed 22.04.2011