

## CHITOSAN MODIFIED WITH 1,8-NAPHTALIMIDE TO GIVE NEW PROPERTIES TO POLYESTER FABRIC

**Desislava Staneva, Daniela Atanasova, Ivo Grabchev**

University of Chemical Technology and Metallurgy, Department of Textile,  
Leather and Fuels, 1797 Sofia, Bulgaria

Sofia University St. Kliment Ohridski, Faculty of Medicine, 1407 Sofia, Bulgaria  
dgrabcheva@uctm.edu

Chitosan was modified with 4-substituted-1,8-naphthalic anhydride. The structure of the obtained product was confirmed by infrared and NMR spectroscopy. Its photophysical characteristics were investigated by fluorescence analysis. The amount of acetic acid needed to dissolve the obtained chitosan in water was determined. A solution of the commercial chitosan and the modified chitosan was also obtained, and the conditions under which the application of the polymers resulted in uniform dyeing of polyester fabric were determined. One sample was treated only at room temperature, and the other was processed at high temperature. The colour characteristics of the resulting fabric were also compared with those of the original fabric. The distribution of the polymer layer on the fibres was determined using an optical microscope. The change in the contact angle of a drop of water on the surface of the resulting fabrics relative to the starting fabric was measured to determine the influence of modification on the surface properties.

**Keywords:** *1,8-naphtalimide, polyester fabric, chitosan, dyeing*

**Acknowledgements:** The authors thank Grant № 239-37/2024, Scientific Research Sector of University of Chemical Technology and Metallurgy.