



**“Gheorghe Asachi” Technical University of Iasi, Romania**



---

## **FILTERING MEDIA FUNCTIONALIZED WITH MONOCHLOROTRIAZINYL- $\beta$ -CYCLODEXTRIN**

**Constantin Luca\*, Ana-Maria Grigoriu, Florin Ciolacu**

*“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, 73 Prof.  
Dr.docent D. Mangeron Street, 700050 Iasi, Romania*

---

### **Abstract**

The present study describes the preparation of a filtering medium from a polymeric cellulosic support (filter paper) by functionalization with monochlorotriazinyl- $\beta$ -cyclodextrin. The permanent immobilization of cyclodextrins confers the new material special properties and the potential for a better decontamination of liquid and gaseous effluents. The structure, physico-mechanical and filtration properties of the filter paper, successfully functionalized with MCT- $\beta$ -CD, have been emphasized by FT-IR-ATR, UV-VIS spectroscopy, SEM-EDX, DSC analyses, tensile and filtration characterization.

In all cases, a comparison of the treated and untreated filter properties was carried out in order to evaluate the treatment's efficiency. The main characteristics of filter papers (filtration efficacy, resistance to the pressure variation/flowing during the filtration process and the ability of retaining particles) are strongly correlated to their physical and mechanical properties.

The paper keeps these characteristics even after its chemical modification, aiming mainly at improving the mechanical resistance in dry and in wet state. The chemical treatment will probably favour superficial catching of inclusion guests that involves a great mass with the decreasing of pore distribution dimensions and the diminishing of air permeability.

*Key words:* filtration efficiency, filter paper, mechanical properties, monochlorotriazinyl-  $\beta$ -cyclodextrin, physical properties

*Received: September, 2011; Revised final: January 2012; Accepted: January, 2012*

---

---

\* Author to whom all correspondence should be addressed: e-mail: [cluca@ch.tuiasi.ro](mailto:cluca@ch.tuiasi.ro); Phone: +40232 278683 (2162); Fax: +40232 271311