



Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

Trapping of polycyclic aromatic hydrocarbons by amphiphilic cyclodextrin functionalized polypropylene nonwovens

Lumholdt, Ludmilla ; Nielsen, Ronnie Bo Højstrup; Larsen, Kim Lambertsen

Publication date:
2012

Document Version
Early version, also known as pre-print

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Lumholdt, L., Nielsen, R. B. H., & Larsen, K. L. (2012). *Trapping of polycyclic aromatic hydrocarbons by amphiphilic cyclodextrin functionalized polypropylene nonwovens*. Abstract from 16th International Cyclodextrin Symposium, Tianjin, China.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Publikationstitel: Trapping of polycyclic aromatic hydrocarbons by amphiphilic cyclodextrin functionalized polypropylene nonwovens

Konference: 16th International Cyclodextrin Symposium, Tianjin, Kina, Maj 2012

Abstrakt:

Trapping of polycyclic aromatic hydrocarbons by amphiphilic cyclodextrin functionalized polypropylene nonwovens

Ludmilla R. Lumholdt^{1,2}, Ronnie Nielsen^{1,2}, and Kim L. Larsen¹

¹ *Section of Chemistry, Department of Biotechnology, Chemistry and Environmental Engineering, Aalborg University, DK-9000 Aalborg, Denmark*

² *Amphidex A/S, DK-9220 Aalborg Ø, Denmark
(kll@bio.aau.dk)*

Recently, there has been an augmented focus on the increasing amount of pesticides, drug residues and endocrine disruptors present in waste and drinking water¹. These pollutants represent a challenge in water purification since they may be hazardous to human health even in low doses².

Cyclodextrins (CDs) are known to be able to form inclusion complexes with a large range of the unwanted pollutants^{e.g.} ³ but in order to utilise this ability to purify water, the CDs must be immobilised on a surface, for instance, a membrane filter.

We have developed a simple and fast method for the functionalization of otherwise inert textiles with amphiphilic CDs using relatively non-harmful organic solvents and an easy setup. The method relies on the self-assembly properties of amphiphilic CDs and can be applied *in situ* by as various methods as spray and kiss-roll yielding multi-layers on the surface of the textile fibers.

In this study we present the ability of amphiphilic CD coated polypropylene nonwovens to trap 8 different polycyclic aromatic hydrocarbons/endocrine disruptors from aqueous solutions thus demonstrating the potential of using the amphiphilic cyclodextrins for water purification.

1. EU Directive on environmental quality standards in the field of water policy, 2008/105/EG, December 16, 2008
2. Lawson, C., Gieske, M., Murdoch, B., Ye, P., Li, Y., Hassold, T., Hunt, P.A., *Biol Reprod.* **2011**, 84(1), 79-86
3. Shixiang, G., Liansheng, W., Qingguo, H., Sukui, H. *Chemosphere*, **1998**, 37(7), 1299-1305