



European Union  
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## ACRYWAST - Active carbon particles from acrylic fibres waste

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# About CLUTEX

## Objectives



- The cluster is seeking to increase prestige of Czech firms and at the same time Czech textile industry.
- This has been achieved by focusing to production with
  - higher utility and added value
  - making higher use of R&D results and
  - improving qualification of workers.
- Main aim is to involve members of the cluster to production of special types of technical textiles

# About CLUTEX

## Main Areas of CLUTEX Activities

- improve cooperation of companies
- deepen cooperation of manufacturing companies and research institutions
- provide resources for pilot development and research projects
- establish contacts cooperation with foreign clusters and institutions



# About CLUTEX

## Foundation

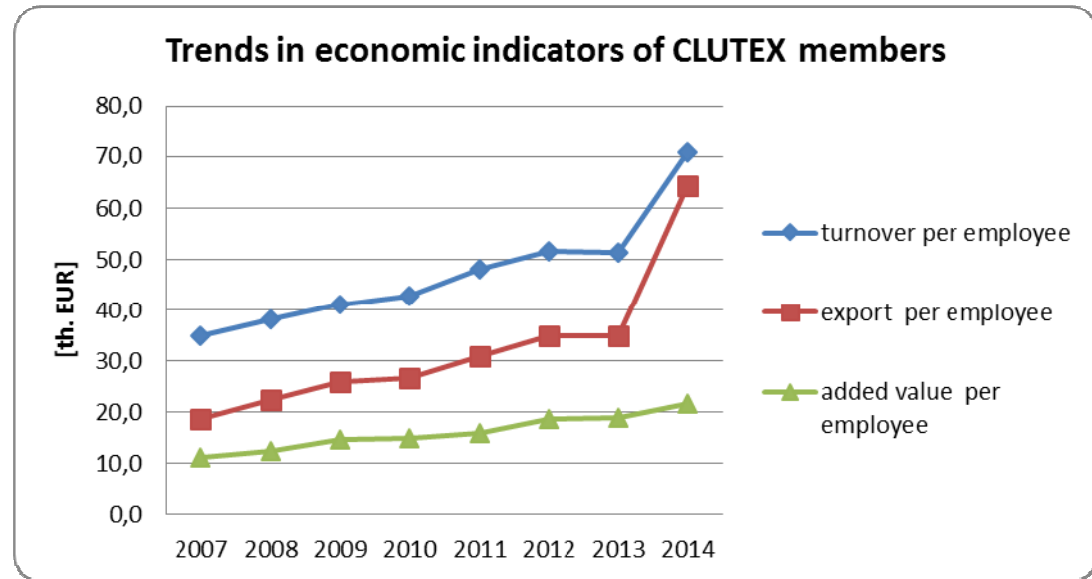
- Founded in 2006
- 17 founding members (companies, FT TUL, ATOK, research institutions)
- civil association => open structure
- join together Czech companies interested in technical textile innovations



# About CLUTEX

## CLUTEX in 2016

- 2015: 31 members
  - 24 SME
  - 5 Large comp.
  - 1 University
  - 1 Association
- Number of employees: near 4,5 thousand
- Turnover 2014: 8 296 mio.CZK (305 mio. EUR)
- Export 2014: 7 517 mio.CZK(276 mio. EUR)



ACRYWAST:

# PROJECT'S LIFE

# Project's idea creation

## Step 1: definition of the problem

- One of CLUTEX partner identified the problem with the acrylic fibre waste in textile mill (produced bathroom rugs)
- Asked CLUTEX for solution





# Selection of the solution

## Step 2:

- CLUTEX asked its members about proposals of solution (R&D Projects, ...)
- Several meetings were realised
- It was chosen the proposal based on carbonisation of acrylic waste



# ACRYWAST's birth

## Step 3:

- The aim of the chosen project proposal:

„Research and development for the preparation of activated carbon particles range in size from nanoparticles to macro particles of high specific surface from the waste material based on the PAN fibres and activating physicochemical respectively mechanical processing according to the purpose of their use. Preparation procedure mounting carbon particles on textile surfaces.



# Realisation of the project

## Step 4:

- The owner of the project: CLUTEX
- The R&D partner: Technical University in Liberec, Textile Faculty
- Financing: Structural Funds (Operational Programme Enterprise and Innovations ) - national programs
- Stages of the project
  - Laboratory survey of possibilities for carbonization and activation of PAN waste fibers
  - Production of samples of carbon particles with different principles of activation
  - Development of coating technologies for anchoring of activated carbon particles on the surface of the fabric
  - Practical verification of coating and testing to achieved effects (odours absorption)

# Realisation of the project

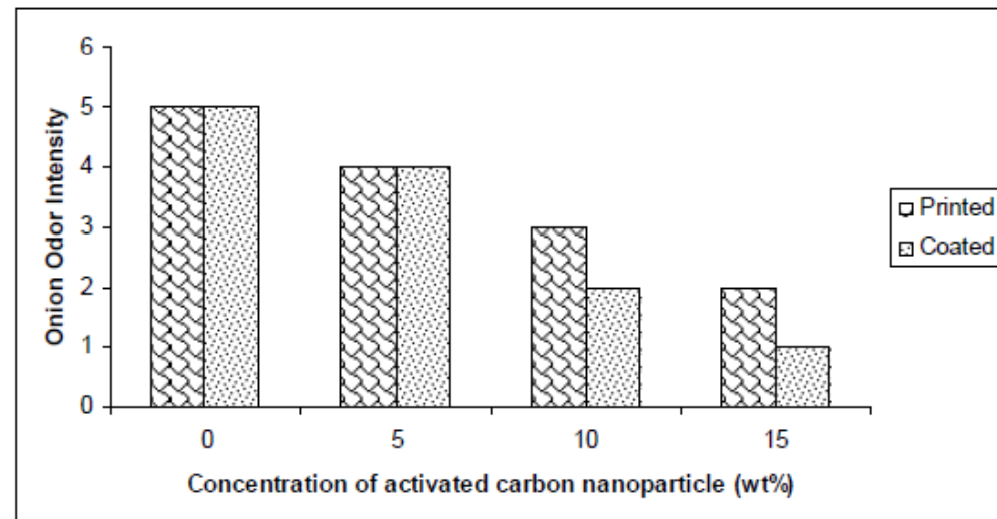
## Transformation of acrylic fibrous wastes into carbon



# Project's Outputs

## Step 5:

- Novel proposal for the processing of polyacrylonitrile based fiber waste
  - Waste carbonization process
  - Verification of the various methods of activation and anchoring of carbon particles on the surface of the fabric



# SUMMARY

- **Solving real problem of manufacturing company**
- **Alternative method of making the active carbon particles**
  
- **Collaboration between research and industry partners through a cluster**
  - example of good practices for the realization of other (not only) R&D projects
  
- **Possibility of funding research projects**
  - Funding of research projects through clusters
  - Benefit especially for SMEs (no „bureaucracy“)



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Thank you!

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