

PRIMJENA NANOTEHNOLOGIJE NA TEKSTILNIM MATERIJALIMA

Sveučilište u Zagrebu



Tekstilno-tehnološki fakultet

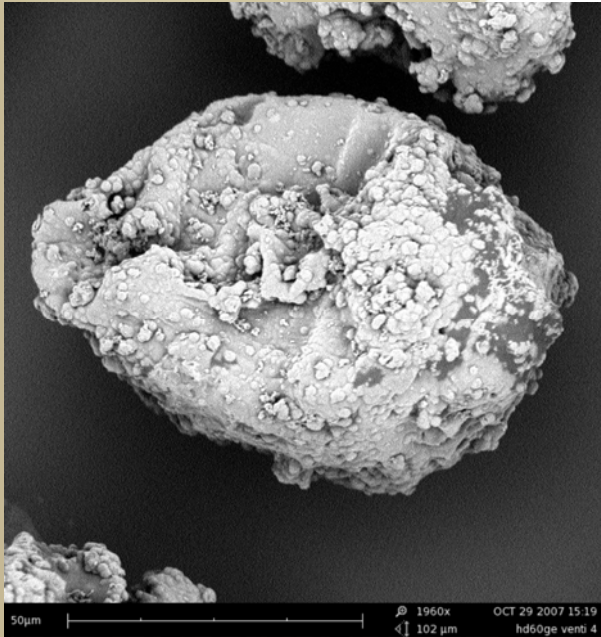


<http://www.ttf.hr>

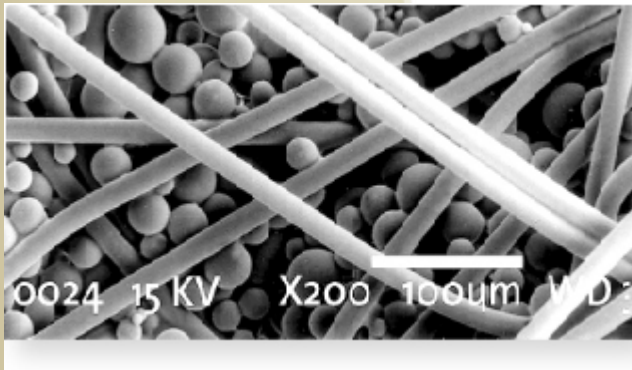
Textile Science Research Center



<http://www.ts-rc.eu>

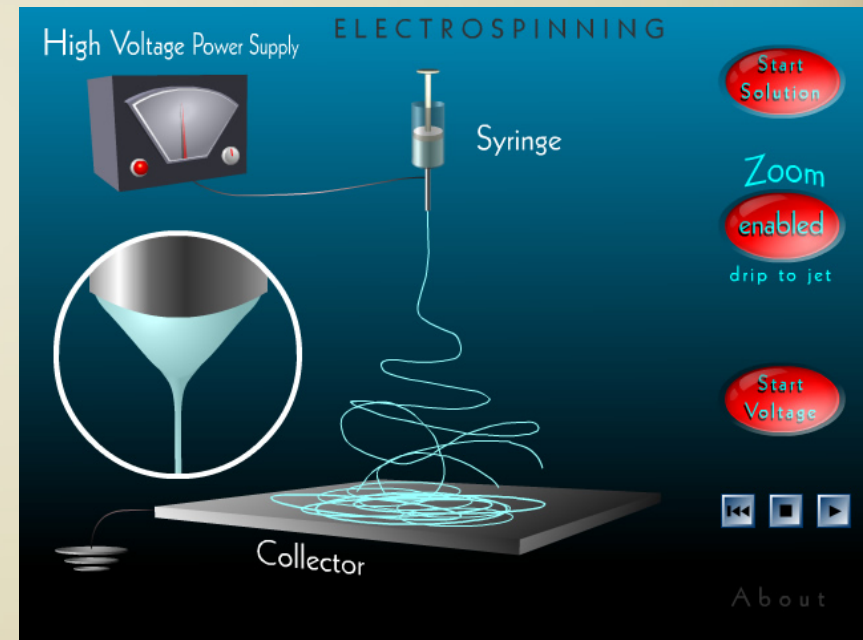


- Nanotehnologija je inovacijski pokretač u mnogim industrijskim granama, pa tako i u tekstilnoj industriji.
- Izrada nanostrukture na vlaknima i u vlaknima ili tekstilijama može se podijeliti u dvije skupine:
 1. **Proizvodnja vlakana**
 2. **Površinske obrade tekstilija**



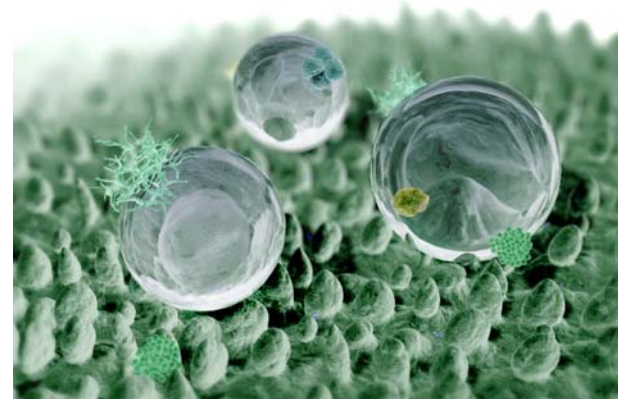
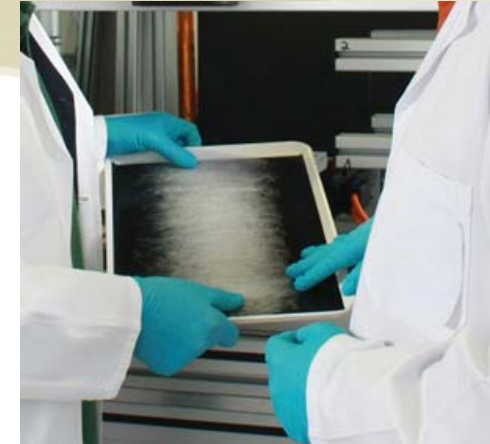
Proizvodnja vlakana

- Elektrospredanje: jedna od tehnologija koja se primjenjuje za proizvodnju nanovlakana
- Primjena:
 - **Medicina** (implantanti)
 - **Filteri**
 - **Netkane tekstilije.**



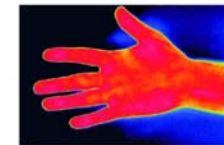
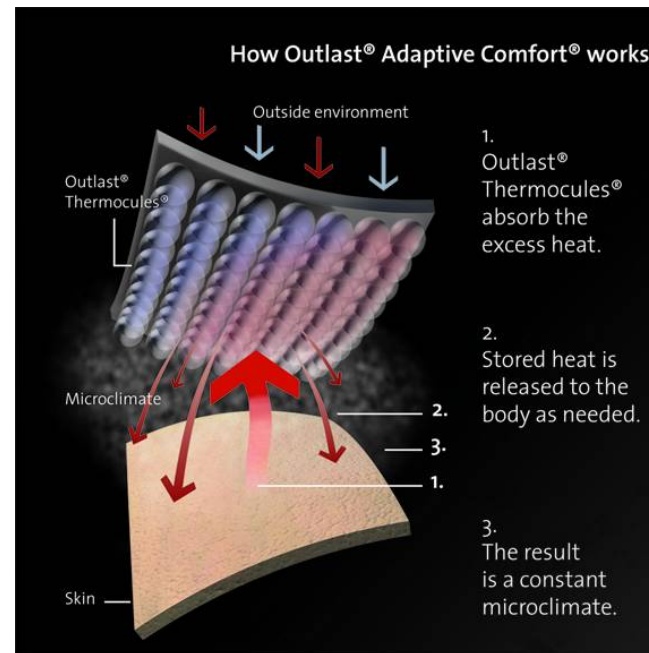
Površinske obrade tekstilija

- Tekstilne površine mogu se površinski funkcionalizirati ili aktivirati:
 - ⇒ Obradom s plazmom
 - ⇒ Naslojavanjem nanočestica (npr. Ag čestice)
 - ⇒ Mikro i nanostrukturiranjem (npr. tzv. lotos efekt)
 - ⇒ Sol-gel postupkom
 - ⇒ Mikrokapsuliranjem (Phase change materials – PCM)

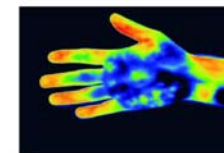


Nanotehnologije na TTF-u

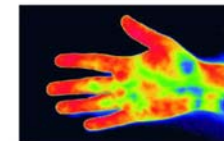
- ⇒ Zavod za temeljne, prirodne i tehničke znanosti
- ⇒ Zavod za vlakna, materijale i ispitivanje tekstila
- ⇒ Zavod za tekstilno-kemijsku tehnologiju i ekologiju
- ⇒ Zavod za primijenjenu kemiju



Picture: Normal tempered hand (before the test)



Picture Cooled hand. Glove without - and with (below) Outlast® material.

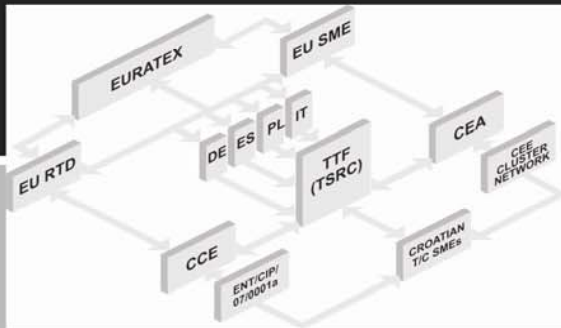


T-Pot project

T-Pot aims to reinforce research potentials of Faculty of Textile Technology (TTF) in order to strengthen university sector to become one of the components of national innovation. The goals are to develop the capacity for breakthrough research leading to innovative textile and textile related products contributing in this way to local industry.

Project activities:

Development of strategic partnerships with well established research institutions and SMEs from Germany, Spain, Poland and Italy (STFI, Leitat, INFMP and GZE).



Cooperation scheme between Faculty of Textile Technology (TTF), its Textile Science Research Centre (TSRC)

Partnering institutions

STFI (DE),
Leitat (ES),
INF (PL),
GZE (IT)
Croatian Chamber of Economy (CCE)
Croatian Employers' Association (CEA)

Reinforcement of human and material potentials

- 3 new PhD students are employed and trained at 3 prestigious research institutions
- 1 expert is employed for the period of 1 year.
- top scientists are attracted to the country for exchange of know-how and guidance of Croatian researchers and manufacturers
- 2 sets of top-level equipment are purchased for:
 - SEM (Scanning Electron Microscopy): FESEM
 - TA (Thermal Analyses): DSC, TGA, FTIR with TG-IR interface.



Researchers employed by the T-Pot at the Department of Textile Chemistry & Ecology



First research secondment (6 months) in EMPA - St. Gallen, in group of Additives & Chemistry.

SEM allows researching the structures invisible to human eye by magnification up to 1,000,000 times.



Instrument SEM-FE MIRA II LMU model Tescan, purchased by the T-Pot project



Set of instruments for thermal analyses, model Perkin Elmer, purchased by the T-Pot project