

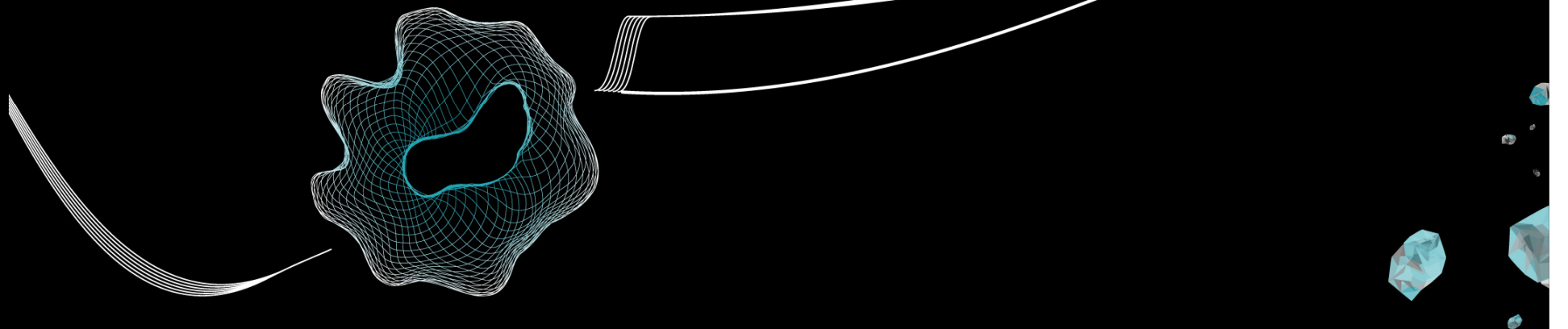
UNIVERSITEIT TWENTE.

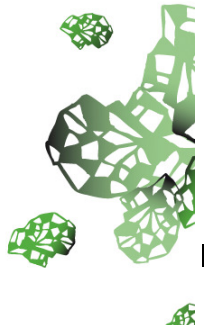
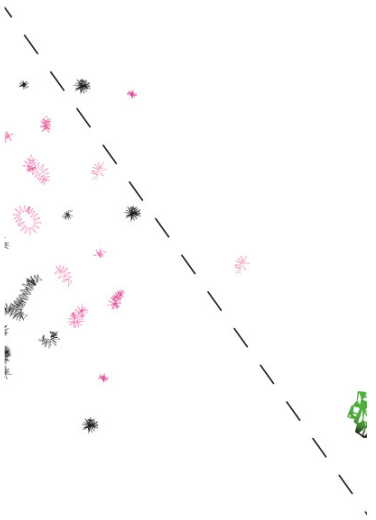
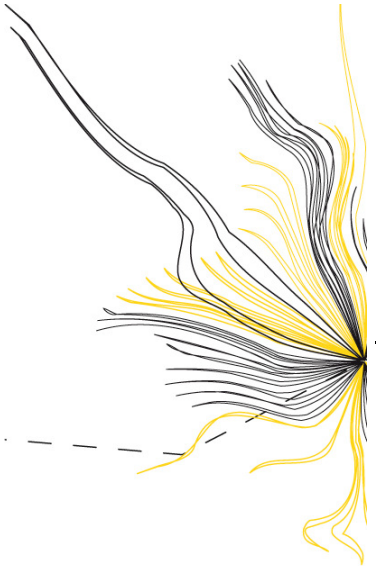


De inzet van smart textiles en logistieke vernieuwing

Marijn Warmoeskerken

Engineering of Fibrous Smart Materials



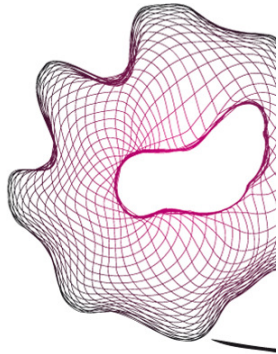




EFSM

ENGINEERING OF
FIBROUS SMART MATERIALS

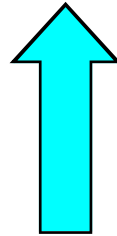
UNIVERSITEIT TWENTE,



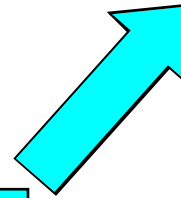
TYOLOGIE VAN EEN ONDERNEMING

Markt

Groei door
grotere markt

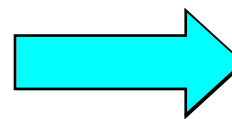


Evenwichtige groei



Grootte van de
onderneming

Groei door
meer competenties



Competenties





VRAAGSTELLING

Smart textiles:

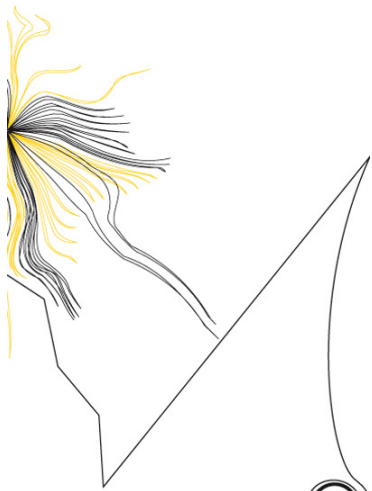
Vormt dat een bedreiging of kunnen we daarmee de competenties uitbreiden?



DEFINITIE SMART TEXTILES

Textiel dat veranderingen in de omgeving kan waarnemen en daarop kan reageren.

Veranderingen in de omgeving en de reactie daarop kunnen mechanisch, elektrisch, fysisch, chemisch of biochemisch van aard zijn.





SMART TEXTILES IN DATA BASES



900.000 hits



100 hits



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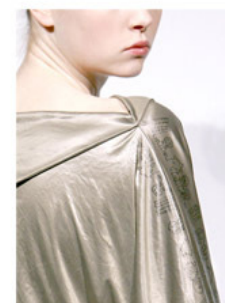


ANGEL CHANG

New York-based fashion designer who explores interactive fashion by adding more technology inspired styles.



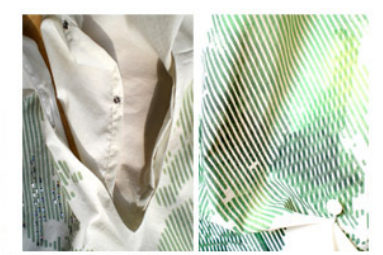
T4E.01.D.08 MOSCOW LONG-SLEEVE VISCOSE TOP WITH DRAWING BY OLAF BREUNING
P4F06.08 LONDON WOOL JACQUARD TROUSERS WITH SATIN TIE



V4N.05B.08 LONDON & HELSINKI HERRING-BONE CASHMERE VEST WITH BATTERY-POWERED HEATING SYSTEM AND ANTI-MICROBIAL SILVER NYLON LINING



D4X.00D.08 HELSINKI REVERSIBLE SCARF-COLLAR COTTON DRESS WITH HEAT-SENSITIVE WORLD MAP PRINT





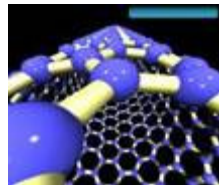
TECHNISCHE DRIVERS VOOR SMART TEXTILES



Nanotechnologie



Biotechnologie



Macromoleculaire chemie



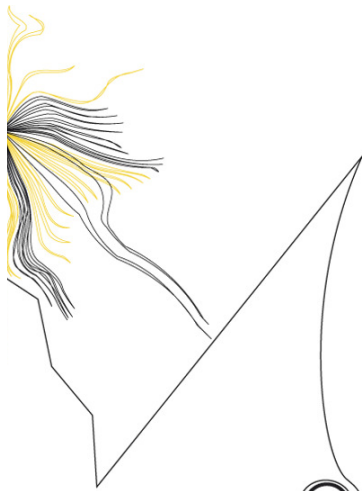
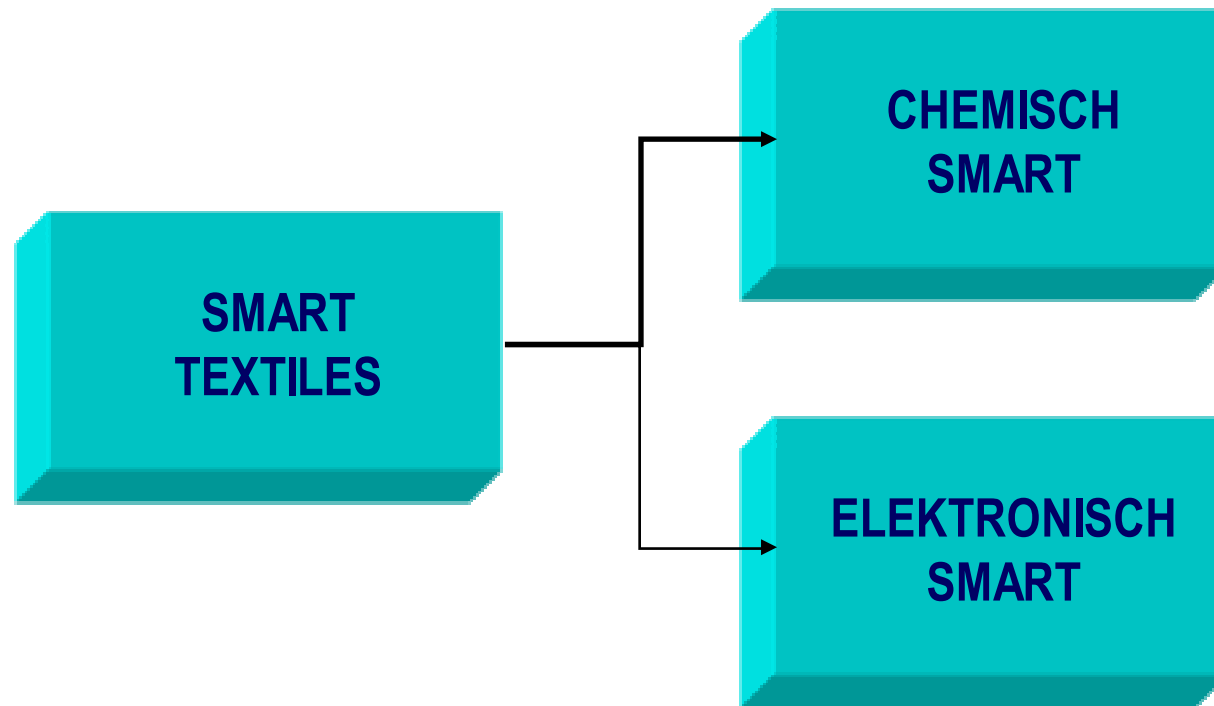
Micro-elektronica & ICT



Productie technologie



KLASSIFIKATIE SMART TEXTILES





ELECTRONISCH TEXTIEL

Incorporation of:

- Sensors and actuators
- MP3, GPS, GSM, Ipad
- Energy harvesting systems
- Plastic electronics

Markets:

- Personal protective garments
- Medical systems
- Sports and Leisure
- Niches





ENERGY HARVESTING

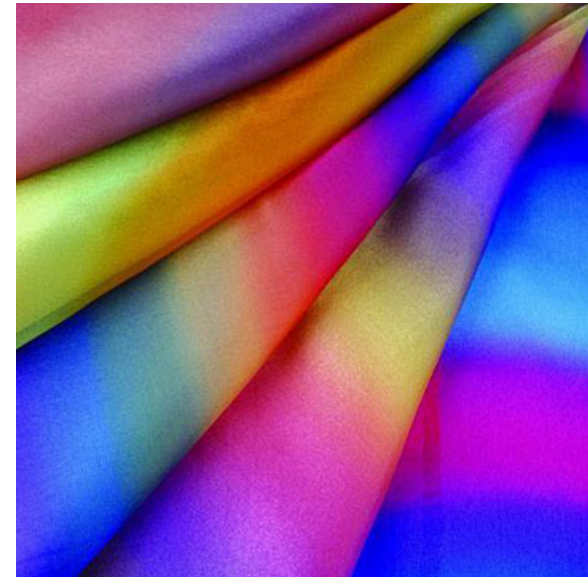
- Solar cells
- Scavenging energy from human motion
 - dielectric polymers
 - piezo elements
- Body heat: Thermo-electric power generation
- Thin lithium-ion batteries





CHEMISCH FUNCTIONALISEREN

- Triggered or slow release of chemicals
- Drugs delivery
- Humidity control system
- Heat control system
- Anti bacterial system
- Color change system



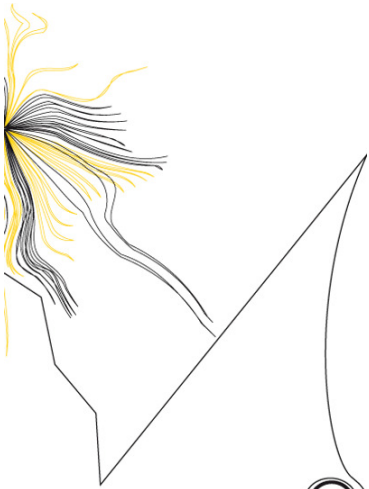


ANTIBACTERIEEL TEXTIEL

Voorbeeld casus

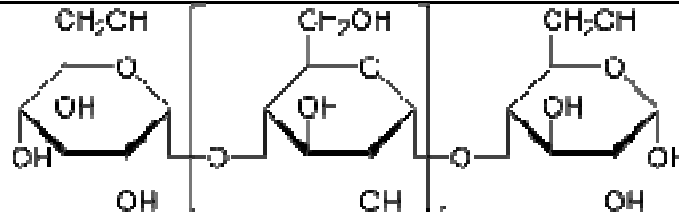
Antibacterieel textiel op basis van cyclodextrine en triclosan

Wat is het en wat betekent dat voor de textielservice industrie?

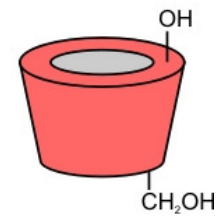
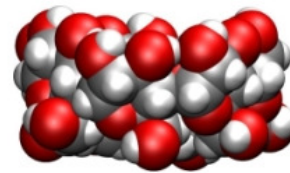
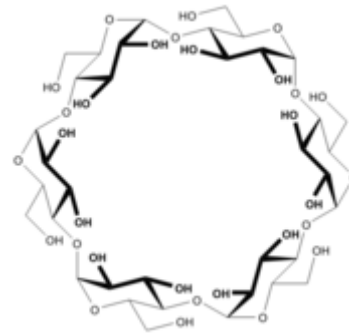


CYCLODEXTRINE

Dextrine

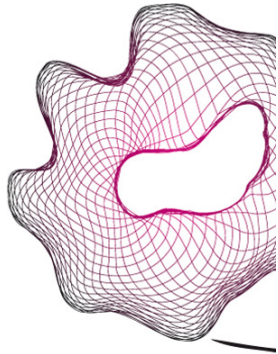


Cyclodextrine



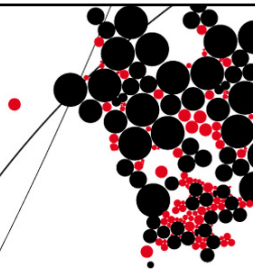
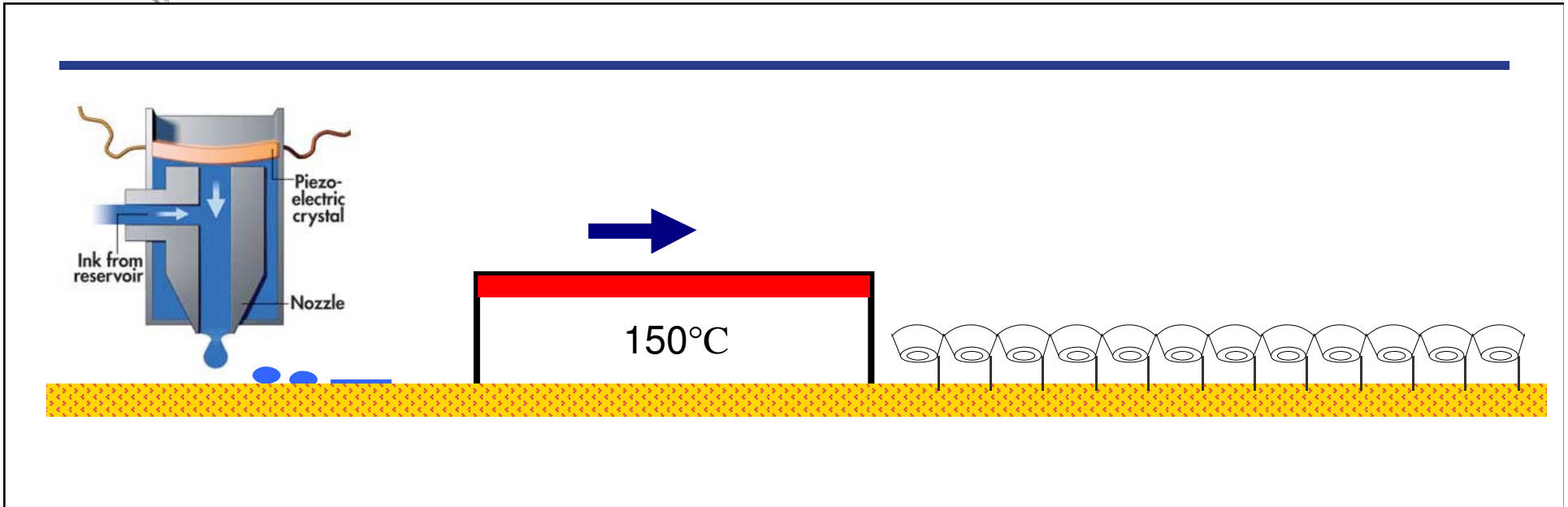
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TEXTIEL MET CYCLODEXTRINE





PRODUCTIE VAN CYCLODEXTRINE TEXTIEL DMV INKT JET PRINTING



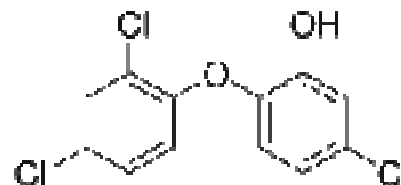


ANTIBACTERIËLE MOLECULEN

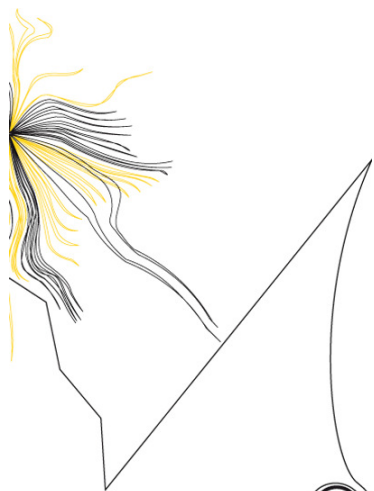
TRICLOSAN

toegepast in:

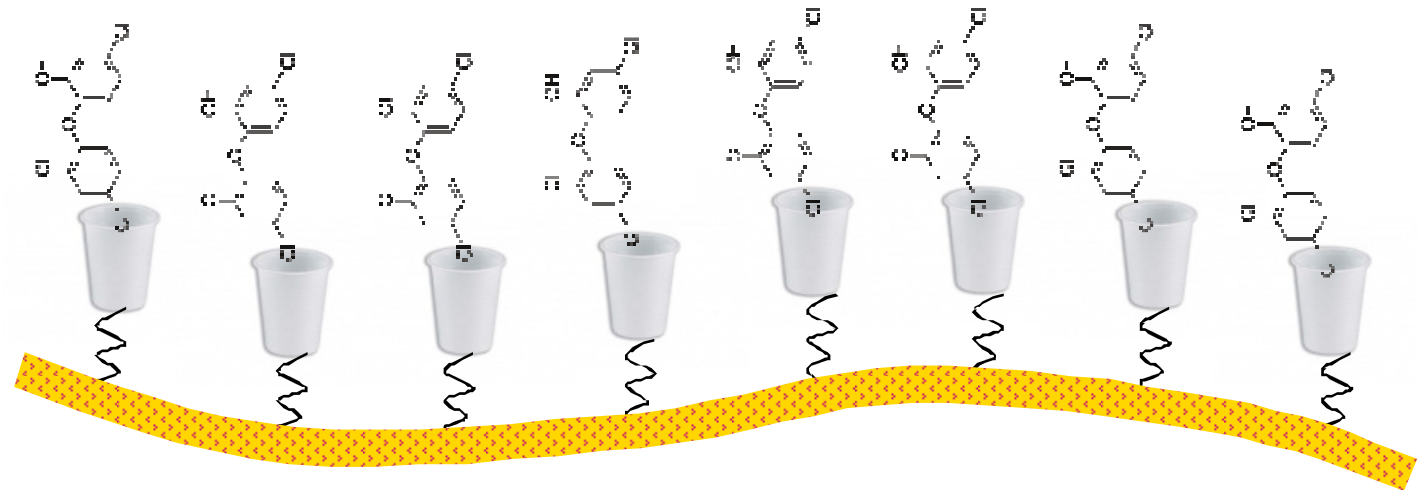
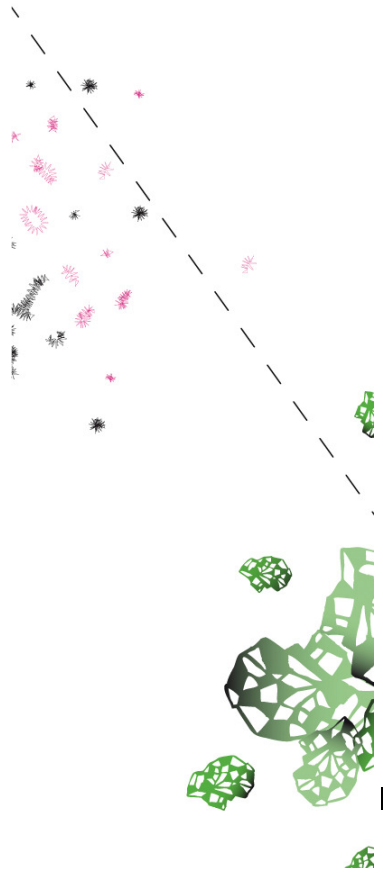
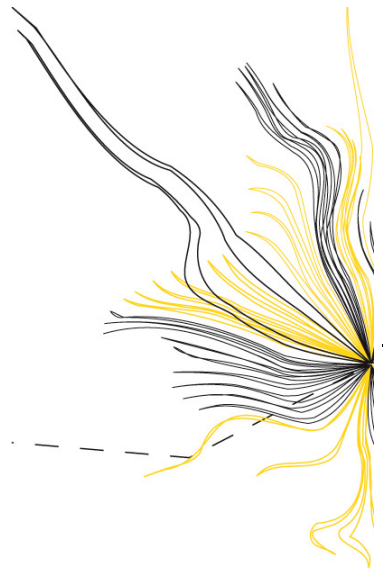
- zeep
- deodorants
- mondwater
- tandpasta



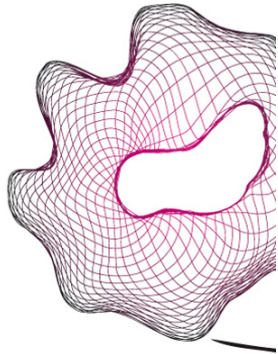
Triclosan heeft een bacteriedodende en schimmelwerende werking en voorkomt onaangename geuren.



ANTIBACTERIEEL TEXTIEL OP BASIS VAN CYCLODEXTRINE EN TRICLOSAN

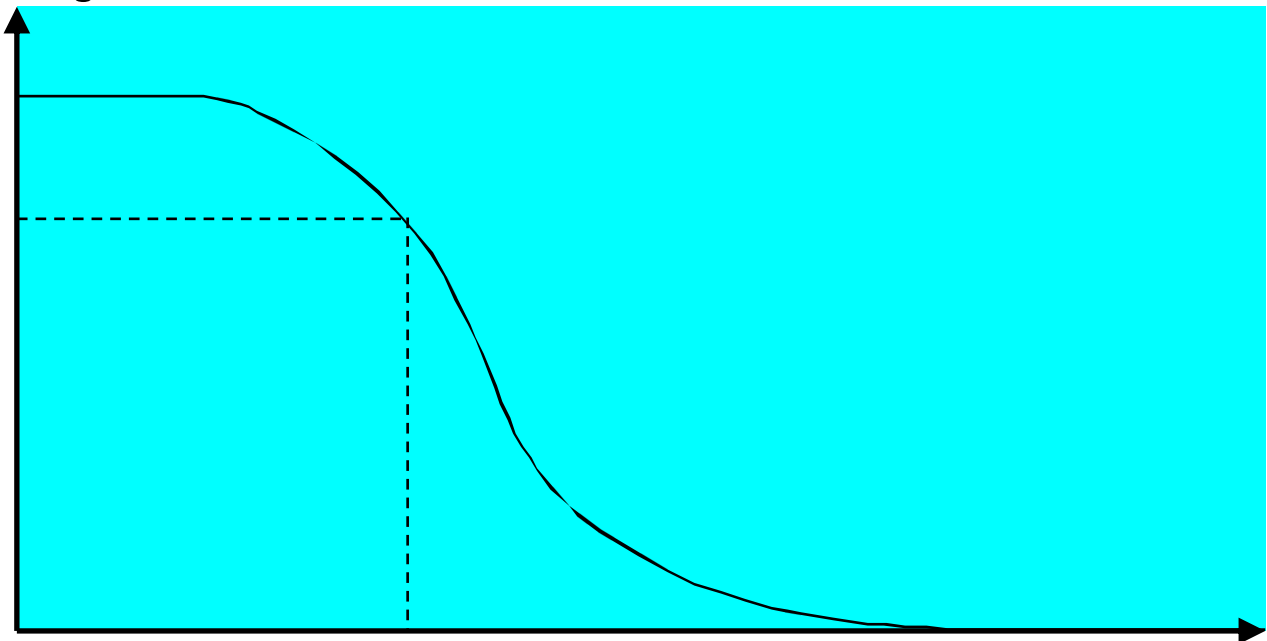


AFNAME ANTIBACTERIËLE WERKING



Antibacteriële
werking

Kritische
waarde



Kritische
gebruikstijd

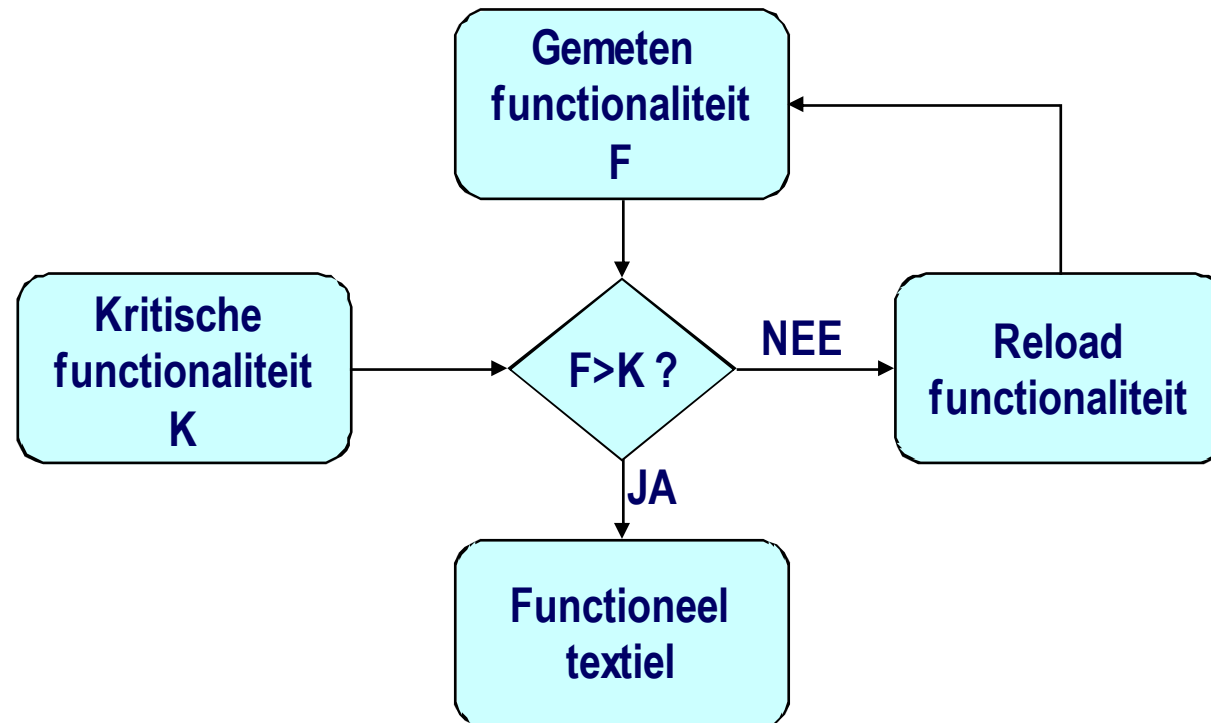
tijd





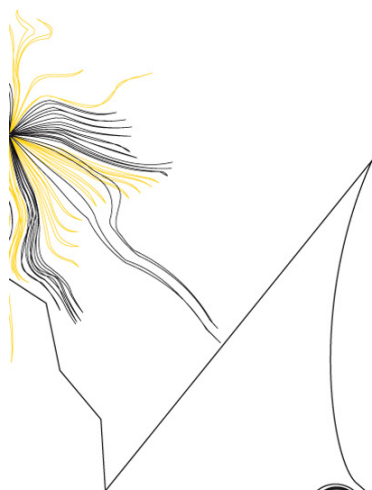
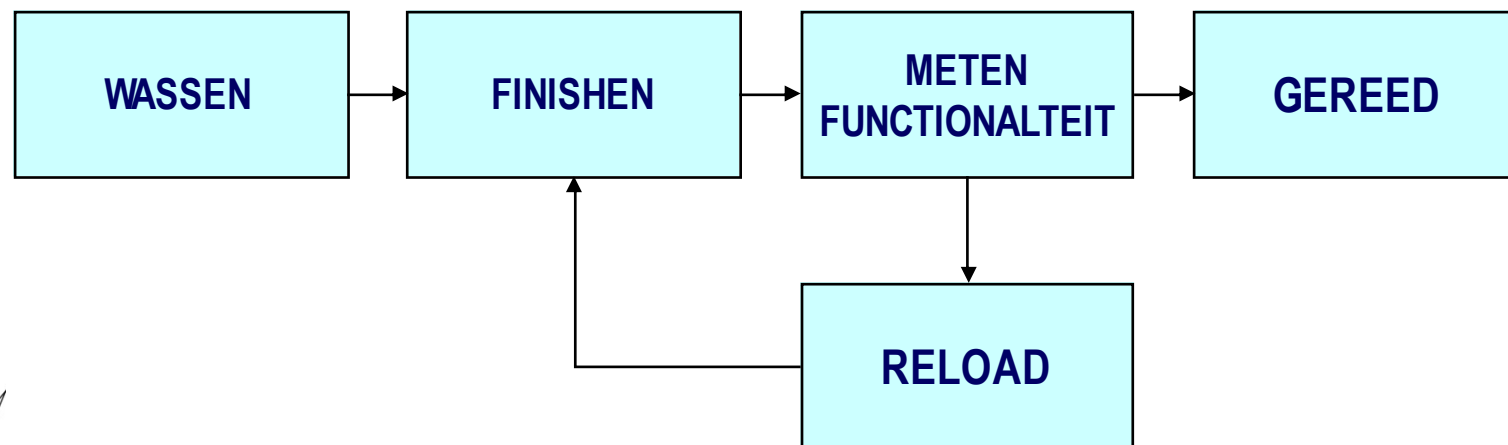
TAAK VOOR DE TEXTIEKSERVICE INDUSTRIE

Bepaal of de functionaliteit boven de kritische waarde is.
Zo niet, reload de functionaliteit





UITBREIDING VAN DE LOGISTIEK





METEN EN RELOAD

Meten van de functionaliteit:

- Antibacteriële werking : Moeilijk
- Hoeveelheid aanwezig triclosan: Makkelijk (spectroscopisch)

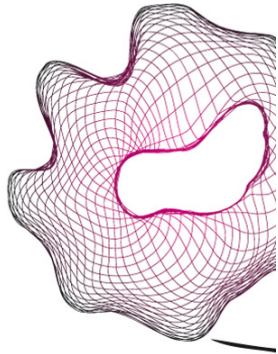


Reload

In een wasextractor?



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CONCLUSIES

Smart textiles komen eraan.

Dat brengt een nieuwe taak voor de textielreiniging met zich mee met name in de logistiek.

Om daarvoor over 5 jaar klaar te zijn is toegepast onderzoek nu dringend nodig.

De textielservice zou dan wel eens de enabler voor smart textiles kunnen zijn.