# wfk – Cleaning Technology Institute e.V.
# Krefeld, Germany

**CORNET/IraSME Partnering Event**

**Elevator Pitch**

Vienna, AT, December 2nd 2015

ALLIANZ INDUSTRIE FORSCHUNG

FFG

## Who we are…

- Approx. 80 employees
- Premises in Krefeld and Brüggen-Bracht
  - 3,600 $m^2$ in Krefeld
  - 1,000 $m^2$ in Brüggen-Bracht
  - 800 $m^2$ technical plant
- Modern cleaning technologies in lab-scale and practice-scale
- Modern analytical equipment
- Microbiological labs, class L2 accord. IfSG, §44

## What wfk stands for…

Reprocessing

Maintenance

Reusability

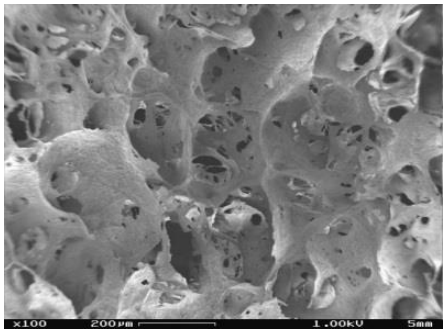
Renewability

Refurbishment

Functionalization

## Medical Devices

- Numerous medical devices: very sensitive
- Flexible endoscopes e.g. damaged by
  - heat
  - mechanical impact
  - aggressive chemicals
- Effective and gentle low temperature procedures for cleaning, disinfection, sterilization needed
- Certain medical implants
  - special additional needs
  - compatibility with bioresorbable materials




# Industrial Cleaning

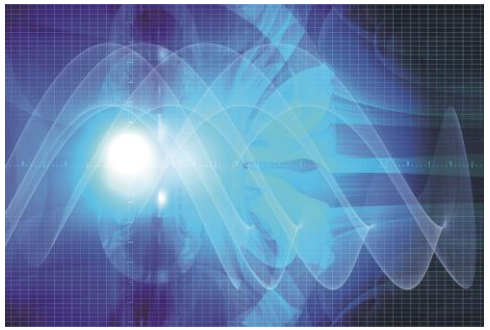
- Industrial cleaning
  - production plants
  - production components
  - cleaning according to demands of the individual processes
- Big challenge
  - substitution of hazardous organic solvents

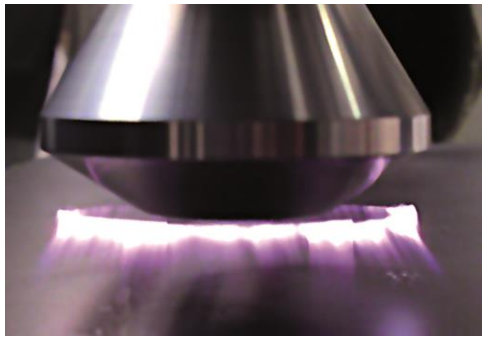
## Textile Cleaning

- Hygienically demanding work wear
  - hygiene status (EN 14065, EN 13795, …)
- Clean room clothing (ISO 14644, VDI 2083, …)
  - conductivity
  - particle release
  - molecular emissions
- Personal protective clothing (EN 471, EN 469, ..)
  - protective functions (visibility, resistance to heat)

## Research

- Liquid carbon dioxide
- Supercritical carbon dioxide
- Shock waves
- Extremophile enzymes
- Ionic liquids
- Plasma





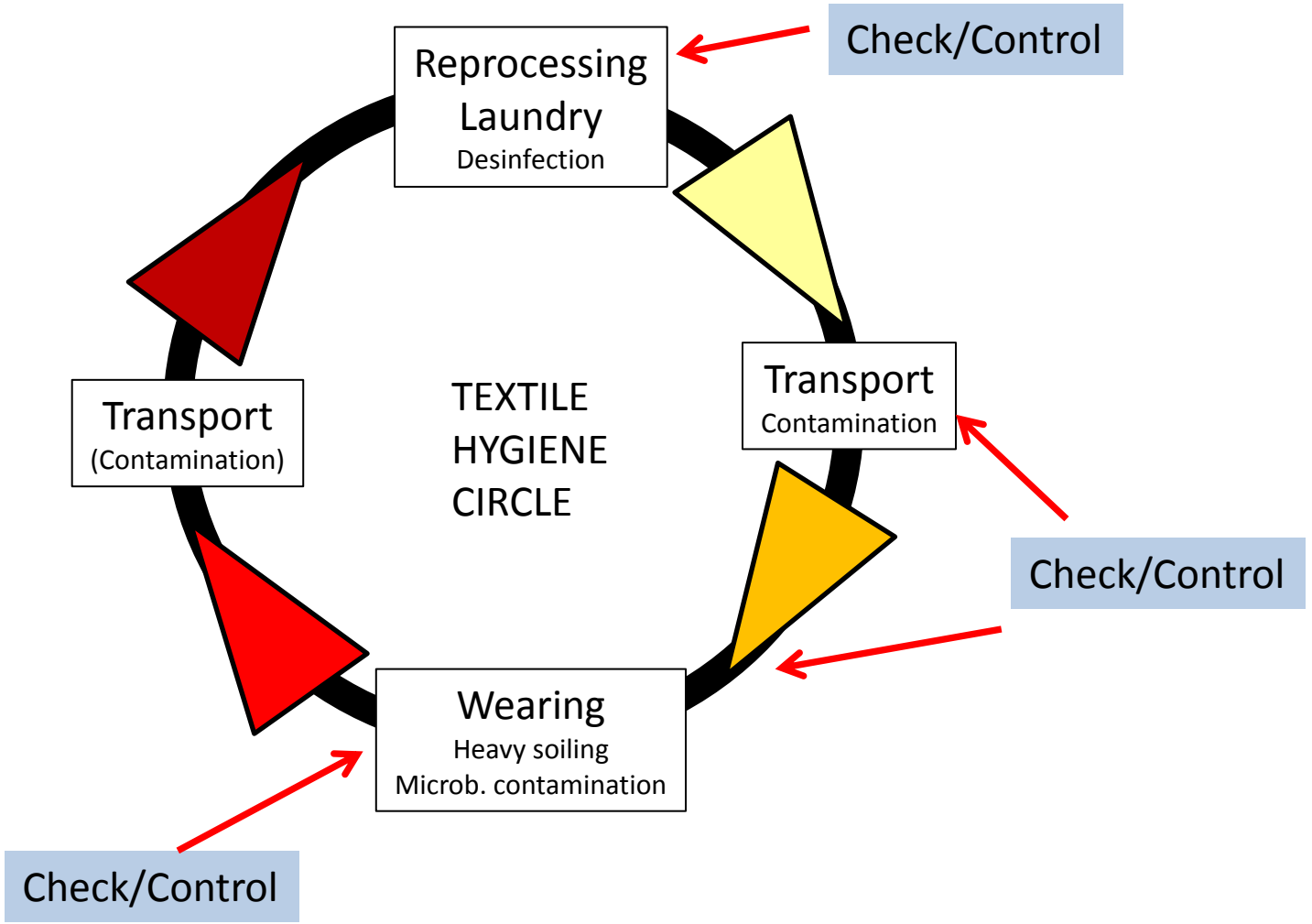
New processes

Methods to control process efficacy

## Project Idea No. 1

*Proposed Working Title*

Development of methods to control the hygiene of textiles during reprocessing and wear circles



# Project Idea No. 1

*Proposed Working Title*
Development of methods to control the hygiene of textiles during reprocessing and wear circles

Textiles in hospitals
Textiles in facilities of social care
Working clothes in the health care system
Working clothes in rescue service
Working clothes in pharmacies
Requirement in DE/AT/CH/NOR: 20 CFU/100 $cm^2$
Requirement in BE: 48 CFU/100 $cm^2$

Textiles in food industrie
Residents own clothes in social care facilities

Requirement in DE/AT/CH: 50 CFU/100 $cm^2$
Requirement in NL: 48 CFU/100 $cm^2$

**wfk**

Development of a new sensitive fast method to quantify the number of living bacteria from surfaces (and textiles)
Chemoluminescent indication of bacterial cells

- 20 min
- Limit of Detection (LOD): ~$10^1$ CFU
- Quantitative method
- Species selective or unspecific detection

**Centexbel**

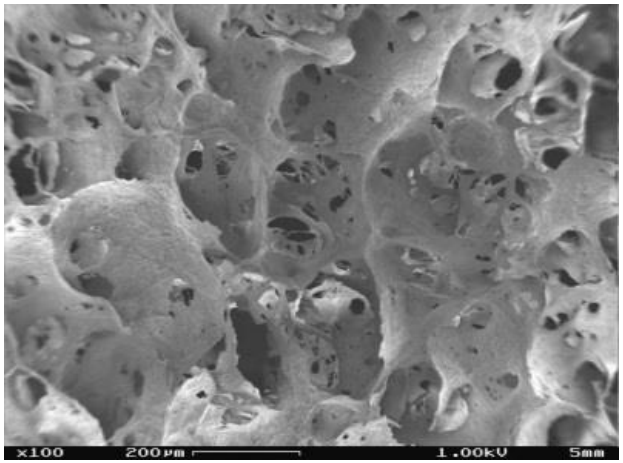
Development of a permanent sensor on textiles that indicates microbial contamination during wear/usage of textiles

**WANTED PARTNER**

Development of a method to retrieve bacterial cells from textiles in a non-destructive way. Substitute for the extraction method according to ISO 11737-1

## Project Idea No. 2

*Proposed Project Aim:*
Development of new medical device materials/implant materials and suitable methods for modification/functionalization using supercritical $CO_2$




Numerous new implant materials and smart wound dressings are currently developed.

wfk offers experience for:

- Disinfection
- Sterilization
- Impregnation with biomolecules and bioactive substances
- Alteration and modification of respective materials in non-aqueous media

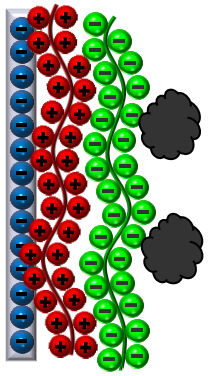
**WANTED:** Researchers that experience issues in satisfying hygiene requirements or modification of their developed materials / devices

## Project Idea No. 3

*Proposed Working Title:* **Technologies and methods to endorse cleaning of photovoltaic systems**

wfk: Development of soil-release-coatings based on weak anionic polyelectrolyte systems

- application as aqueous solution at neutral pH
- no UV/Vis-absorption
- high stability under weather conditions (e.g. rain)
- simple detachment under cleaning conditions (e.g. alkaline pH)



without coating

commercial hydrophobic coating

polyelectrolyte systems

**WANTED PARTNER**

Researchers that are enganged in functionalization of glass, development of new glass-like materials, polymers, etc.

# Thank you for your attention

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