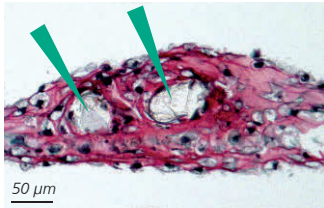


# BIORESORBABLE FIBERS



## UNIQUE VERSATILE MATERIAL PLATFORM

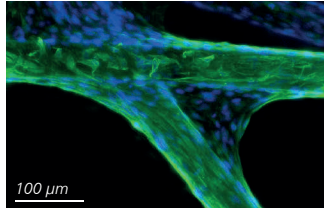
- (In)organic and hybrid biomaterials
- Adjustable fiber diameters: 20 - 120  $\mu\text{m}$
- Adjustable biodegradation rates: minutes – days – months – years
- No shrinkage effects in contact with physiological solutions
- Surface modification and biofunctionalization
- Incorporation and attachment of hydrophilic/-phobic drugs
- Fabrication to endless fibers, fiber fleeces and cotton ball like structures
- CE-certification for diabetic ulcer and second degree burns



## VALUE CHAIN FROM ONE PROVIDER

- **Synthesis:** know-how over 20 years, high versatility in composition, viscosity etc.
- **Spinning process:** unique plant, high variety in process parameters, adjustable mesh sizes
- **Fiber properties:** adjustable fiber diameter, (elasto)mechanically properties and biodegradation rates, no shrinkage under physiological conditions
- **Product design:** versatility in product shapes, packaging, drug delivery while fiber degradation

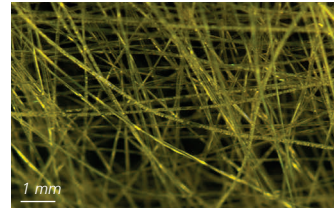
*Left: cartilage tissue on silica gel fibers (safranin-o-staining; arrows = fiber cross section)  
Middle: human dermal fibroblasts colonized on crossed hybrid microfibers  
Right: drug-loaded silica gel fiber fleece as a bioresorbable drug-releasing implant*



- **Drug delivery & functionalization:** integration of drugs and diagnostics etc., surface modification and biologization
- **Proof of concept & safety testing:** human 3D in-vitro tissue models and standardized testing according to DIN ISO 10993

## APPLICATION FIELDS

- Regenerative medicine
- Wound management
- Drug delivery systems
- Tissue engineering
- Advanced therapeutic medicinal products (ATMPs)



# THERANOSTIC (NANO)PARTICLES

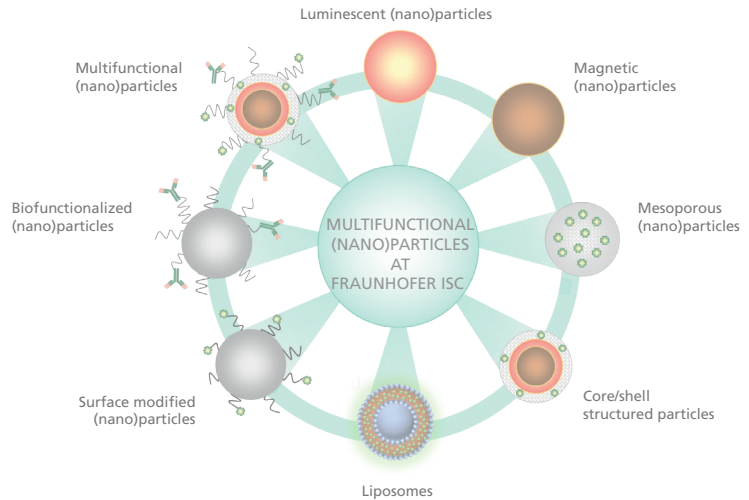


## EXPERTISE

- ( $\mu$ - and nano-)particle synthesis
- Customized property profile
- Surface modification and biofunctionalization
- Upscaling and automatization of processes
- GMP-compliant manufacturing

## EQUIPMENT AND METHODS

- Transmission electron microscopy (TEM)
- Scanning electron microscopy (SEM)
- Dynamic light scattering (DLS)
- Nitrogen sorption measurement (BET)
- Chemical analysis in combination with spectroscopic, gravimetric and photometric analysis
- UV/VIS- and fluorescence spectroscopy and -microscopy



## OFFER TO INDUSTRY

- Commissioned synthesis, surface modification and biofunctionalization
- Automatization of particle production processes
- Characterization
- Biofunctionalization
- Biocompatibility and functional testings in human 3D in-vitro models
- Adaption of modular designed systems to your application techniques

## APPLICATIONS

- Immunodetection assays
- Contrast agents for in-vivo imaging
- Drug delivery systems
- Therapeutic active systems