POLYMER TEMPLATES FOR BIOMEDICAL APPLICATIONS

Customized services and solutions

Our objectives

• Develop a solution for your specific template requirements and application
• Fabrication, functionalization, and characterization of your devices

Providing the complete process chain

• Master fabrication (flexible micro / nanostructures, down to < 100 nm)
• Replica manufacturing
• Surface functionalization (e.g. plasma treatment and metallization)
• Physical and chemical characterization
• Cell culture equipment
• Lab on a chip solutions including electrodes

Your benefit

• Customized wettability and cell behavior investigations (cell growth, elongation, morphology, adhesion, stimulation)
Fraunhofer IISB offers R&D services for polymer substrates from master processing to molding process development and prototype fabrication for cell experiments.

**Template manufacturing**
- PDMS
- Hybrid polymers

**Surface manipulation/ functionalization**
- Various micro / nanopatterns (pillars, grooves, gratings, non-periodical and hierarchical structures)
- Plasma treatment (e.g., O₂, Ar, N₂/H₂, Ar/O₂)
- Metal deposition (e.g., Ti, TiN, ITO, Pt)

**Physical characterization**
- SEM and FIB cross sections
- Atomic force microscopy (AFM)
- Contact angle measurement
- UV-VIS spectroscopy

**Chemical characterization**
- Energy dispersive X-ray spectroscopy (EDX)
- X-ray photoelectron spectroscopy (XPS)
- Attenuated total reflectance Fourier transform infrared spectroscopy (ATR-FTIR)

**Cell preparation and cultivation**
- Cell counting
- Cell staining
- Cell passaging
- Media preparation
- Transient transfection
- Establishment of recombinant cell lines

**Cell observation and quantification (collaboration with external partners)**
- Fluorescence microscopy
- Cell adhesion, proliferation, migration …
- Automatic imaging and live cell imaging
- Electrically active stimulation and recording from cultured electrical cells