
# 9. Workshop Projekthaus NanoBioMater mit Treffen des Leitungsgremiums

**Sprecher:** Prof. Dr. Sabine Laschat **Koordinatoren:** Prof. Dr. Christina Wege, Prof. Dr. Günter Tovar
**Leitungsgremium:** Prof. Dr. Joachim Bill, Prof. Dr. Franz Brümmer, Prof. Dr. Holger Jeske, Prof. Dr. Sabine Ludwigs, Prof. Dr. Ingrid Weiß
**Teamleiter:** Dr. Alexander Southan, Dr. Sabine Eiben, Dr. Dirk Rothenstein

**Datum:** 12. Oktober 2016
**Uhrzeit:** 13:00 - 15:00 Uhr
**Raum:** Raum 5B am Fraunhofer IGB, Nobelstr. 12, 70569 Stuttgart – B-Gebäude 5.OG

## Programm

13:00 – 13:05 Uhr **Begrüßung**
Prof. Dr. Christina Wege und Prof. Dr. Günter Tovar
Koordinatoren des Projekthauses NanoBioMater

13:05 – 13:30 Uhr **Small-Angle X-Ray Scattering – A Quantitative Tool for the Characterization of Nanoscale Interfaces**
Dr. Anna Schenk
Institut für Polymerchemie, Universität Stuttgart

13:30 – 13:55 Uhr **Biomimetic Hyaluronan (HA) hydrogels with tunable charge densities**
Patricia Hegger
Max-Planck-Institut für Intelligente Systeme

13:55 – 14:20 Uhr **Integration of an UV radiation source into a 3D printer and exploring the influence of intermediate curing during hydrogel printing**
Adrian Hiller
Institut für Grenzflächenverfahrenstechnik und Plasmatechnologie IGVP, Universität Stuttgart

14:20 – 14:45 Uhr **Progress in NanoBioMater**
Dr. Dirk Rothenstein, Dr. Sabine Eiben, Dr. Alexander Southan
Teamleiter des Projekthauses NanoBioMater

14:45 – 14:50 Uhr **Schlussworte Sprecher**
Prof. Dr. Sabine Laschat
Sprecher des Projekthauses NanoBioMater

15:00 – 16:30 Uhr **Treffen des Leitungsgremiums**
Prof. Dr. Christina Wege und Prof. Dr. Günter Tovar
Koordinatoren des Projekthauses NanoBioMater


## Small-Angle X-Ray Scattering – A Quantitative Tool for the Characterization of Nanoscale Interfaces

Dr. Anna Schenk
Institut für Polymerchemie, Universität Stuttgart

Small-angle x-ray scattering (SAXS) is a powerful, non-destructive analytical technique sensitive to electron density variations within multiphase materials. The diffuse elastic small-angle scattering intensity provides a statistically accurate measure for the size, shape and orientation of nanostructural motifs as well as the interface roughness in an inhomogeneous sample. Therefore, SAXS effectively complements high-resolution imaging techniques such as transmission electron microscopy (TEM) or atomic force microscopy (AFM), while averaging over a much larger sample volume. However, as SAXS represents an indirect method, deriving information from reciprocal space, appropriate mathematical models are required to retrieve structural parameters from the data sets.

This presentation will introduce some general concepts regarding the acquisition, analysis and interpretation of SAXS data. Particular emphasis will be put on the application of this experimental method to biological and bio-inspired nanocomposite materials.

## Biomimetic Hyaluronan (HA) hydrogels with tunable charge densities

Patricia Hegger
Max-Planck-Institut für Intelligente Systeme

HA-based hydrogels are of a great interest due to their ability to mimic the hydrated ECM niche and provide biocompatible platforms for drug delivery and tissue engineering. Our aim is to produce novel biomimetic HA-hydrogels with different charge densities to study their effects on mechanical properties, diffusion of signaling molecules as well as cell adhesion and proliferation.

## Integration of an UV radiation source into a 3D printer and exploring the influence of intermediate curing during hydrogel printing

Adrian Hiller
Institut für Grenzflächenverfahrenstechnik und Plasmatechnologie IGVP, Universität Stuttgart

In 3D printing of hydrogels, printed objects are often cured chemically after or during processing in order to fix the printed object shape permanently. For this purpose, a UV radiation source was integrated into an existing 3D printer setup. Hydrogel objects were printed layer by layer and were irradiated either once after printing of the complete object or for certain irradiation times after each layer. We found that curing of each layer resulted in a decrease of mechanical strength of the printed objects due to the lack of chemical bonding between the layers. Therefore, we conclude that intermediate curing of printed 3D hydrogel objects should be avoided if possible.