



Centre for Biosystems Science and Engineering

SEMINAR

at 4:00 PM on April 7th, 2016

MCB Seminar Hall, Biological Sciences Building

**Glycosaminoglycan derivatives – promising candidates for the
design of functional biomaterials**

Dr. Dieter Scharnweber

Institute of Materials Science, TU Dresden

Numerous biological processes such as tissue formation, remodelling and healing are strongly influenced by the composition and the biochemical properties of the cellular microenvironment. Glycosaminoglycans (GAGs), as major component of the native extracellular matrix (ECM), e.g. in the form of proteoglycans can be chemically functionalized and thereby modified in their binding profiles, both for direct cell interaction and for interaction with mediator proteins (e.g. growth factors). Thus GAGs and their derivatives are promising candidates for the design of functional biomaterials to control healing processes in healthy and health-compromised patients. The talk will showcase joint results from biophysical interaction and in vitro studies as well as molecular modelling simulations revealing the influence of pre-bound GAGs on the interaction of mediator proteins with their respective receptors thereby having major consequences on their bioactivity.

About the speaker:

Prof. Scharnweber is head of the group “Biomaterial-Development” at the Max Bergmann Center for Biomaterials at the Institute of Materials Science, Technische Universität Dresden (TU Dresden). His major scientific interest are biomaterials focusing on (i) composition-structure-property relationships of oxide layers on titanium-based materials, (ii) techniques for surface-engineering of biomaterials, (iii) matrix-engineering, i.e. the design of artificial extracellular matrices mimicking the native cellular microenvironment, and (iv) the design and combination of defined biochemical and physical micro environments for applications in tissue engineering and regenerative therapies. Dieter Scharnweber studied chemistry at the TU Dresden with a PhD in physical chemistry. He is a professor at the TU Dresden since 2008. Besides being editor of a book and author of numerous book chapters Dieter Scharnweber has published more than 150 publications. He also has a number patents to his name.