

Selected research topics in Biomedical Engineering: Developments in Dental Research

Location: Kleiner Hörsaal, Universitäres Zentrum für Zahnmedizin Basel (UZB)

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Intrinsically antibacterial systems for biomedical applications

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Abstract: Antibiotic resistance is a complex global problem that poses significant challenges in the future of healthcare. Biomaterials are increasingly playing an important role in regenerative medicine, however their implantation in the human body can cause undesirable bacterial infections, which are of serious concern that adds to the burden of global antibiotic resistance. Hence reducing the incidence of infection during and after surgical procedures to combat the consequence of resistance to antibiotics is of paramount importance. Biomaterial related infections usually originate via adhesion of bacteria, which then proliferate on the surfaces leading to formation of biofilms that are more resistant to antibiotics. There are several approaches being pursued to reduce implant or biomaterial related bacterial infections and in this presentation some of the challenges will be discussed along with our approaches utilizing methacrylate derivatives of eugenol and silver-graphene oxide nanoparticles will be presented.

Curriculum: Sanjukta Deb is a Professor in Biomaterials Science at King's College London. She has over 28 years of experience in the field of biomaterials research. She holds a PhD degree from the University of Delhi in Organic Chemistry and pursued her research in the field of biomaterials in London. She is currently Chair of the Biomaterials Chemistry research interest group of the Royal Society of Chemistry and the past president of the UK Society for Biomaterials of which she is founder member. She is a Fellow of the Academy of Dental Materials and Royal Society of Chemistry. Sanjukta is an Associate Editor for Journal of Biomaterials Application and J of Tissue Science & Engineering and has published over 120 papers, authored several books and book chapters and holds 7 patents.

Her research focusses on using biomaterials chemistry towards clinical translation and her current research is aimed at developing biomimetic scaffolds that serve to bridge the gap between stem cell biology and the clinic. Both injectable and pre-cell seeded scaffolds are being developed with the ability to function as a conduit for dynamic extracellular signalling by chemical, biological and mechanical means that can be customized for maxillofacial, bone, nerve and spinal defects. The other main areas of her research interests are development of antibacterial agents, orthopaedic bone cements, calcium phosphates as bone substitutes, carriers for sustained drug delivery systems and novel dental restorative materials.