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Novel Surface Modifications for Medical Applications

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For the past three decades, extensive research has been performed in the surface design of new polymers for a variety of medical applications. Great progress in therapeutics and diagnostics can be attributed to these scientific advances in biomedical polymers. A variety of bioinert materials or bioactive materials using drugs, cells, and growth factors are widely utilized for the implants, devices and tissue regeneration. These materials provide an improved biocompatible materials to host, to significantly decrease or increase the host/tissue/blood response to the foreign materials. In the future, biomaterials will play a different role in modern therapeutics. New materials will be tailored to interact more on a protein and cellular level to achieve high degree of biocompatibility, biospecificity and bioactivity.

In this presentation, various biocompatible materials based on surface/bulk engineering will be demonstrated, which can be utilized as therapeutics implants and therapeutic vehicles for biologically active molecules such as cell, protein /peptide and gene.

Keywords: Surface modifications, Biomedical Applications, Biocompatibility