PC 69

ARCHITECTURE-CONTROLLED SELF-ASSEMBLY OF COMPLEX POLYMERIC ARCHITECTURES FOR BIOMEDICAL APPLICATIONS

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Site-specific vaccine, drug and gene delivery remains a formidable challenge. Recently, a number of complex, well-defined macromolecules with various architectures have been produced by Monteiro and coworkers[1,2], some of which hold great potential as nanocarriers for bioactive molecules. The ability to synthesise such macromlecules opened an investigative opportunity for controlling macromolecular self-assembly in solution by means of architectural design.[3-4]

The influence of increasing architectual complexity of polystyrene/polyacrylic acid macromolecules (Figure 1) on self-association in solution was investigated. It was found that association mechanisms were primarily dictated by macromolecular architectural design and to a lesser degree hydrophobic content.

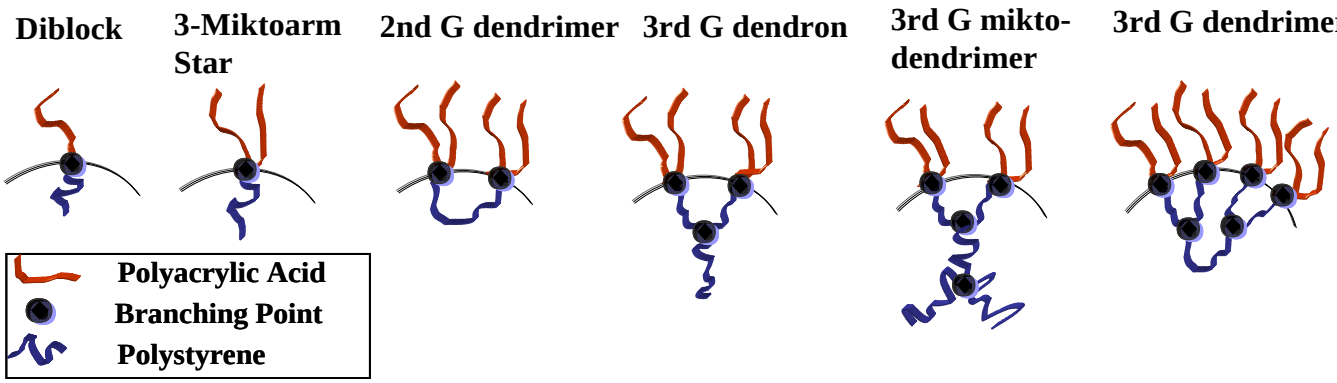

Figure 1: Schematic representation of investigated architectures as hydrophobic (polystyrene)/hydrophilic (polyacrylic acid) regions of a micelle

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