pH-sensitive polymeric micelle of MPEG-poly(β-amino ester) block copolymer

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In this study, MPEG was used as hydrophilic block and poly(β-amino ester) had a role of pH-sensitive block, hydrophilic or hydrophobic with pH. MPEG-poly(β-amino ester) block copolymer was dissolved in various pH buffer solutions, and then micelle concentration of block copolymer solutions is measured by fluorescence spectrometer. Micelle concentration was changed with pH change and CMC(critical micelle concentration) was changed. Micelle is formed at pH 7.4 and collapsed below pH 7.0.

Micelle is formed in aqueous solution by balance of hydrophilic and hydrophobic part. At low pH, poly(β-amino ester) block is ionized, then becomes hydrophilic part and at high pH, poly(β-amino ester) block is deionized, then becomes hydrophobic part. Therefore micelle that has a hydrophilic shell and hydrophobic core is formed at high pH, but is collapsed at low pH because all part is hydrophilic.