

BEHAVIOR OF DIRECT AND REVERSE PLURONICS (17R4 AND P104) IN AQUEOUS SOLUTION

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Pluronic-based hydrogels have shown considerable potential in enhancing both the solubility and the controlled release of poorly water-soluble compounds (i.e. anticancer drugs). In addition to direct Pluronics (PEO_x-PPO_y-PEO_x), reverse Pluronics (PPO_y-PEO_x-PPO_y), have also shown promising potential as nanocarriers. Some of the most recent studies conducted with reverse Pluronics involve mixtures with other compounds, with the aim, for example, of conferring greater stability and achieving coexistence of both types of micelles, or even improving gelation. This topic is of great interest, as some research suggests that the addition of reverse Pluronics improves drug solubilization compared to when only direct Pluronics are used. This work analyzes the structures that form a direct Pluronic (P104) and a reverse Pluronic (17R4) mixed in aqueous solutions by varying the molar ratios within overall copolymer concentrations, evaluating the ability of 17R4 to interconnect micelles with hydrophobic PPO ends. Measurements of density, sound velocity, and viscosity were used to detect structural changes. In addition, rheometry was used to relate these changes to the mechanical properties of the solutions. It has been found that the molar ratio of 17R4 directly affects the gelation of P104 due to the ability of reverse Pluronics to interconnect with each other.

Keywords: Copolymers, Pluronics, Micelles

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