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9-3-single strand helicoidal nanofibers of photo-active polyoxazolines

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The polyoxazolines is an attractive polymers family characterized by a pseudo-peptidic structure, own bio and hemocompatibility, low toxicity and furtivity towards immune systems-basic properties for biomedical applications. They offer an additional attraction with the ability to self-assembly under various morphologies including spherical nanoparticles, nanowires using hydrogen bonds, dipolar interactions, etc. In this study, we focused on poly (2-methyl-2-oxazoline) decorated by coumarin units, able to photo-activity and able to pi-stacking and further original self-assemblies as already shown with peptides. In a previous work, we demonstrated the UV-activity and the self-organization of amphiphilic di-block and tri-block co-polyoxazolines in water. Herein, well-defined single strand helicoidal fibers were elaborated using amphiphilic graft copolymers. These polymeric filo micelles grow according to Crystallization-Driven Self-Assembly (CDSA) between polyoxazoline repetitive units and the coumarin ones. In other experimental conditions, the UV-activity of spherical nanoparticles of the same copolymers were also examined particularly the photo-cross-linking of the nanoparticle core.

Recent Publications

1.Korchia L, Bouilhac C, Lapinte V, Travelet C, Borsali R, Robin J (2015) Photodimerization as Alternative to Photocrosslinking of Nanoparticles: Proof of concept with Amphiphilic Linear Polyoxazoline Bearing Coumarin Unit. *J. Polym. Chem.*; 6: 6029-6039.

Biography

Vincent Lapinte is an Assistant Professor in the Polymer Department of the Institute of Materials Charles Gerhardt of Montpellier, ICGM, France. His area of expertise is the synthesis and the self-organization of polymers including polyoxazolines as well as the synthesis of bio based building blocks and polymers. He has published more than 40 papers in reputed journals and has 7 patents.

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