

Thin multilayer films and microcapsules bearing DNA quadruplex moieties

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DNA is an attractive tool in materials science to build up nanostructured materials due to its remarkable molecular recognition properties and structural features.

The assembly of stable and multifunctional DNA nanosized objects requires complex building blocks. The use of oligonucleotides-polymer conjugates, combining oligonucleotides building blocks with synthetic polymers, confers additional structural and functional features to the DNA nano-assemblies.

Herein, we report the synthesis and characterization of a oligodeoxyguanosine, G15-mer, synthetic polymer conjugate and its assembly into multilayered thin film. The G-quadruplex polymer conjugate, has been assembled via hybridization with a 30-mer cytosine strand, C30, using a layer-by-layer (LbL) approach into microcapsules with highly desirable characteristics.