**Detection of DNA methylation in DNA/π-conjugated polymers supramolecular assemblies**

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In this work, we assess the potential of **C**ationic **P**oly**T**hiophenes (**CPT**s) as optical signal transducers for the detection of methylation of DNA. CPTs constitute an interesting class of π-conjugated polymers for biosensing applications, as they combine solubility in aqueous media and have sensitive optical properties for the detection of biomolecules such as DNA.(1) Recently, we have exploited poly[3-(6’-(trimethylphosphonium)hexyl)thiophene-2,5-diyl] (P3HT-PMe3), an achiral polymer. When DNA and this polymer are mixed in aqueous solutions, self-assembly occurs and yield chiral supramolecular complexes, as observed by an induced Circular Dichroism (ICD) in the spectral range where the polymer absorbs.(2,3) We exploit the ICD of the DNA/P3HT-PMe3 complex for the detection of methylation of DNA.(3,4,5) To achieve this goal, we take advantage of induced CD signals for the development of a chiroptical detection of methylation of DNA by methyltransferase (Mtase), responsible for the methylation of DNA.

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