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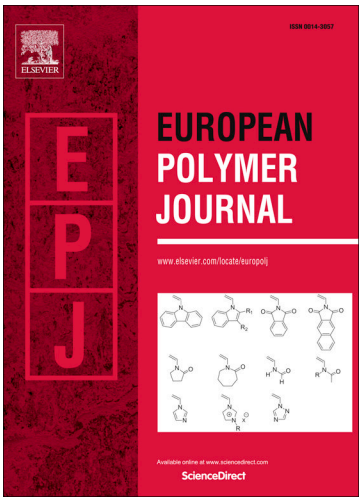

Synthesis and spectroscopic properties of a new fluorescent acridine hyperbranched polymer: applications to acid sensing and as antimicrobial agent

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SYNTHESIS AND SPECTROSCOPIC PROPERTIES OF A NEW FLUORESCENT ACRIDINE HYPERBRANCHED POLYMER: APPLICATIONS TO ACID SENSING AND AS ANTIMICROBIAL AGENT

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HIGHLIGHTS

1.- The newly synthesized hyperbranched polymer functionalized with 6 acridine groups has been studied, showing no interaction between the acridine moieties.

2.- The protonation reaction of the acridine functional groups leads to an increase of fluorescence which could be used for acid sensing both in solution and in polymer films.

3.- The hyperbranched polymer shows good antimicrobial and antifunghi activity towards some Gram positive and Gram negative bacteria and some yeasts.

4.- The hyperbranched polymer shows higher biocompatibility than its low-molecular weight reference compound towards two mammalian cell lines (C2C12 and Swiss3T3).

5.- The hyperbranched polymer allows enough cellular viability when it is used in its biofunctional concentration range.

1. ABSTRACT

The synthesis of a hyperbranched polyesteramide functionalized with 6 acridine groups (P1000-ACRID) is described, and its photophysical properties compared with its low molecular weight reference compound (ACRIDyne). The hyperbranched polymer does not show aggregation of the acridine groups neither in solution nor in solid polymer matrices. The behavior of both chromophores as fluorescent acid sensors has been studied in solution and in solid polymer films, showing an increase in their fluorescence emission. The stoichiometry of the protonation reaction has been calculated, showing that ACRYDyne is able to protonate twice both in solution and in solid polymer matrices, whereas P1000-ACRID only protonates