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Nanoassociates of amphiphilic carboxy-calixresorcinarene and cetylpyridinuim chloride: The search of optimal macrocycle/surfactant molar ratio

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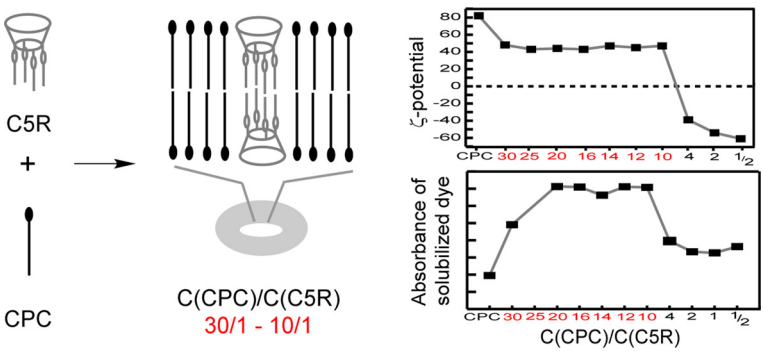
GRAPHICAL ABSTRACT



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ABSTRACT

Here we present the supramolecular surfactant-macrocycle system which properties are independent on system composition in the wide range of components concentrations. The study of the interaction of octacarboxy-tetra (*p*-phenylene-oxy-pentyl)calixresorcinarene (**C5R**) and cetylpyridinuim chloride (CPC) in mixed aqueous solutions were performed by dynamic light scattering and electrophoretic methods, ^{1}H and FT-PGSE NMR methods, absorption and fluorescence spectroscopy, and TEM. The variation of CPC/**C5R** molar ratio from 30/1 to 10/1 leads to the formation of nanoassociates with similar composition, size, surface potential value, and improved (in compare with CPC) solubilizing properties. The preparation of mixed supramolecular systems which properties are independent on system composition in the wide range of components concentrations is an elegant example of the producing of colloidal materials with the required morphology and properties.

1. Introduction

The design of nanosized supramolecular associates is one of the opportunities to construct multifunctional smart materials and nanocontainers [1–6]. The advantages of their creation using the supramolecular approach are easy and reproducible non-covalent synthesis, which controls the systems composition and morphology. Nanosized supramolecular associates have a potential to be applied in the

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