

Novel thermoresponsive water-soluble oligomers based on amphiphilic calixresorcinarenes

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Abstract

© 2017 Informa UK Limited, trading as Taylor & Francis Group. Novel water-soluble thermoresponsive oligomers TO1 and TO2 were obtained by reaction of amidoamine tetramethylcalixresorcinarenes (C1) and tetrapentylcalixresorcinarenes (C5) with ethylene glycol diglycidyl ether. The compounds were characterised by ^1H and FT-PGSE NMR, FTIR, static light scattering and elemental analysis. The thermoresponsive properties of oligomers were investigated by spectrophotometry, DLS, FT-PGSE NMR and TEM. The cloud points of oligomers (43 °C for TO1 (5 mg/ml) and 41 °C for TO2 (1.2 mg/ml), respectively) were determined. The influence of salts effect on TO2 cloud points was investigated. The binding of anti-inflammatory drug naproxen (Nap) at 20 °C by TO1 and TO2 and its partial release at cloud points of oligomers in aqueous solution are observed using fluorescence and FT-PGSE NMR methods. New example of creating of thermoresponsive macrocyclic systems on the basis of amidoamine calixresorcinarenes with possibility of substrate binding and release under the influence of thermo-stimuli in an aqueous solution was shown.

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Keywords

Calixresorcinarenes, fluorescence, naproxen, thermoresponsive oligomers

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