DESIGN OF NEW PHOSPHORYLATED AMPHIPHILIC CALIX[4]ARENES

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Calixarenes are macrocyclic compounds of a great interest in supramolecular chemistry as a bowl-shape platform for construction of new molecules with remarkable host properties [1–2]. Amphiphilic calix[n]arenes are well-studied and exhibit interesting properties of self-assembly [3]. Most of research was focused on the study of anionic amphiphilic calixarenes. Majority anionic amphiphilic calixarenes contain a sulfo- or carboxyl group in the upper rim and long hydrophobic alkyl chains in the lower rim of the calixarene.

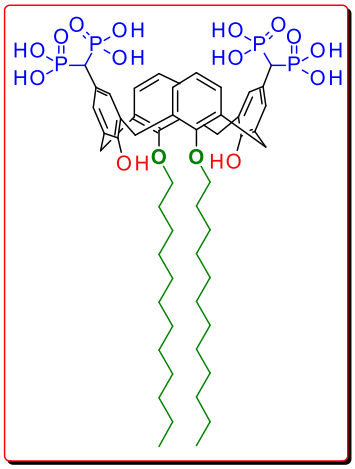

Fig. 1. Upper-rim functiona-lized calix[n]arene surfactants

We have developed the synthesis of novel amphiphilic calix[4]arenes possessing hydrophilic phosphoryl groups on the upper rim and hydrophobic alkyl chains in the lower rim of the calixarene core (Fig.1) as well as flipping over the macrocycle platform to prepare a new class of amphiphilic calixarenes containing hydrophobic tails on the upper rim of phosphoric acid moiety on the lower rim of the calixarene core (Fig. 2). The aggregation properties of the novel calixarenes are being studied to evaluate the effect of the conformation of calix[n]arene backbone, the upper-rim /lower-rim location of the hydrophobic tails, chain length of the hydrophobic tails, and structure and location of the polar head group.

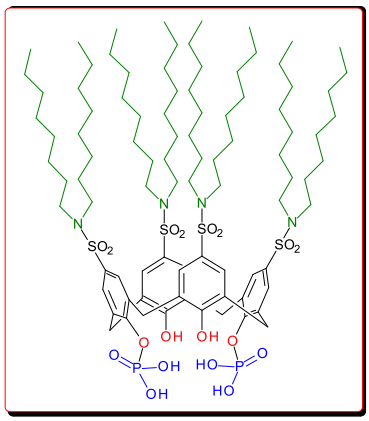

Fig. 2. Lower-rim functiona-lized calix[n]arene surfactants

References

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3. Consoli, G. M. L., Granata, G., & Geraci, C. (2018). "Calixarene-based micelles. Design and Development of New Nanocarriers", p. 89–143. doi:10.1016/b978-0-12-813627-0.00003-x

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