Self-assembly and Optical Characteristics of *meso*-Bodipy-Encapsulated Micellar Clusters

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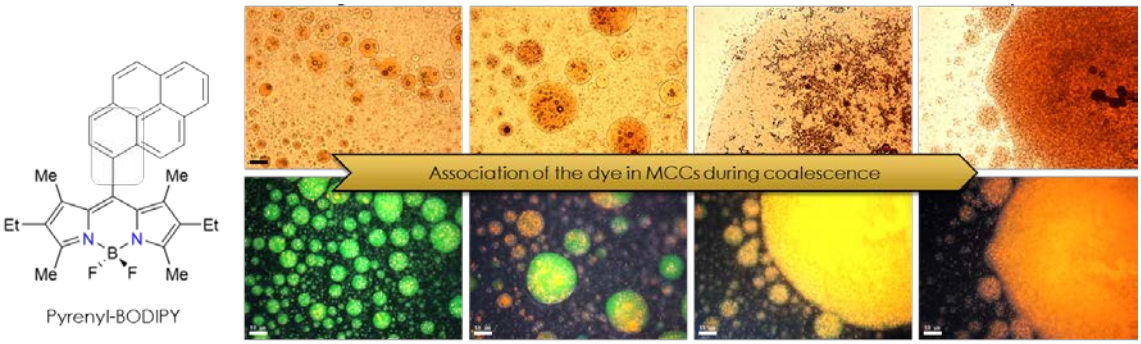
Functional materials built on a "bottom-up" principle represent a class of the most diverse substances with practically useful characteristics. Based on this concept, a new approach to the surfactants (Triton X-100 and X-114) modification has been developed, allowed them to form non-covalent dynamic conjugates at room temperature. The method is based on 1) the formation of strong complexes between a hydrophobic chelating ligand (eg, batofenantroline, BPhen) and micelles, forming chelated micelles. At this stage, the hydrophilic parts of BPhen (nitrogen atoms) remain on the surface of the micelle, while its hydrophobic fragment is embedded in the hydrophobic core. This system is stable due to the strong hydrophobic forces between the surfactant and the chelator; and 2) upon the addition of a complexing agent having affinity to BPhen and capable of binding to two or more BPhen molecules, such as a transition metal ion chelated micelles form a three-dimensional supramolecular aggregate system of micellar coordination clusters (MCCs). These systems exhibit an extremely high ability to solubilize hydrophobic compounds, such as anti-cancer drugs, toxic substances (bilirubin), etc. In addition, these clusters are capable of encapsulating hydrophobic phosphors and changing their optical characteristics. Here we demonstrate the features of MCCs to encapsulate a number of fluorophoes of meso-substituted bodipy family. It was shown that these compounds retain their fluorescence being encapsulated inside of MCCs but depending on the substituent nature it is possible to control the optical characteristics of encapsulated bodipys.

Figure 1: Evolution of micellar clusters, containing meso-pyrenyl substituted bodipy.



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