Synthesis and Characterization of Fluorescent Rosette Nanotubes*

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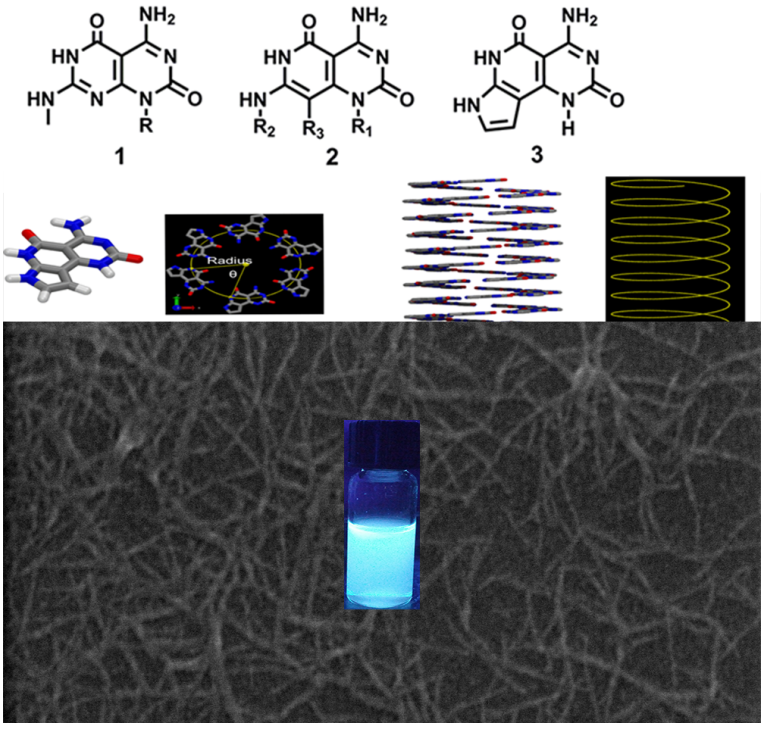
Rosette nanotubes (RNTs) are novel soft organic nanomaterials composed of a guanine-cytosine hybrid (G∧C) building block that self-assembles in aqueous environments into stable nanotubes decorated with chemical functionalities on the periphery. These materials have substantial design flexibility and a range of applications, which are partly attributed to their diverse surface functionalization. Since their first development in the Fenniri group,[1] several studies established their applications as coatings for medical devices, materials for tissue engineering and drug display/delivery.[2, 3 ,4]

In an effort to reduce the synthetic effort for producing self-assembling G∧C modules for large scale production of RNTs, we have developed an efficient synthetic strategy and self-assembly protocols based on a new G∧C derivative **2**, an analogue of **1** that differs by the substitution at the N-atom in the G-ring with a C-atom. [5] In this talk, we present the synthesis of the tricyclic G∧C base **3** from R_3 functionalized motif **2** that can form fluorescent RNTs in N,N-dimethylformamide (DMF). The self-assembly of **3** into RNTs was established using scanning electron microscopy, transmission electron microscopy, atomic force microscopy and UV-Vis spectroscopy. Fluorescence properties of RNTs in DMF will also be presented.



* This work is supervised by Prof. Hicham Fenniri, *Northeastern University, Boston, MA, USA.*

References

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