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ORGANOMETALLIC DENDRIMERIC POLYMERS WITH NEAR-INFRARED CHROMOPHORES

Barry R. Steele, Spyros Georgakopoulos, Carolina Villalonga-Barber, Constantinos G. Screttas

*Institute of Organic and Pharmaceutical Chemistry, National Hellenic Research Foundation, 48. Vas. Constantinou Ave.,
11635 Athens, Greece*

bsteele@eie.gr

Compounds that absorb in the near-infrared (NIR) region are of much current interest due to their potential use in optoelectronics and, more particularly, for biomedical applications. Because of the relative transparency of biological tissues and fluids in the NIR region, such compounds hold out much promise as diagnostics or in applications involving photodynamic therapy. Our principles for the design of organic NIR materials are based on the combination of strong electron donating and accepting groups and has led to the synthesis of small molecules with encouraging spectral characteristics. The ferrocenyl group is a very good electron donor, while carbocations are excellent electron acceptors, and materials containing this group are very good absorbers in the NIR region [1]. The special properties of dendrimers, on the other hand, are also now being actively explored in medicinal chemistry and we are now developing synthetic routes to dendrimers with potential as NIR dyes which incorporate multiple triarylmethyl chromophores containing ferrocenyl substituents. We have explored divergent and convergent routes for the synthesis of these molecules and this presentation will provide details of our work towards 1st, 2nd and 3rd generation products with a ferrocene core as well as related compounds.