MACROCYCLIC SYSTEMS BASED ON [60]FULLERENE AND PERYLENEDIIMIDES

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During the last decades a lot of donor-acceptor dyads have been smartly employed as functional building blocks in artificial systems of natural photosynthesis. Among the large number of organic molecules frequently used in the preparation of photo-electroactive molecular systems, [C_{60}]fullerene and perylenediimides (PDI) derivatives stand out. So far we can find examples where the fullerene ball is covalently or supramolecularly attached to PDI subunits in a linear configuration, yielding fullerene-PDI based dyads, triads and so forth, which combine the electrochemical and photophysic properties of the [60]fullerene [1] with the electrochemical and light-absorption properties of PDI derivatives.[2] However, to the best of our knowledge, the synthesis of macrocyclic C_{60}-PDI has not been described. These kinds of systems are quite interesting because will be possible to study the influence of the electronic interaction between both units in a face-to-face configuration.

Herein, we will report our more recent results related with the synthesis of different macrocyclic carbon nanostructure-perylenebisimide arrays (Figure 1) [3] focussing mainly in the photoinduced electron transfer properties for their application as artificial photosynthetic systems and in organic photovoltaics.

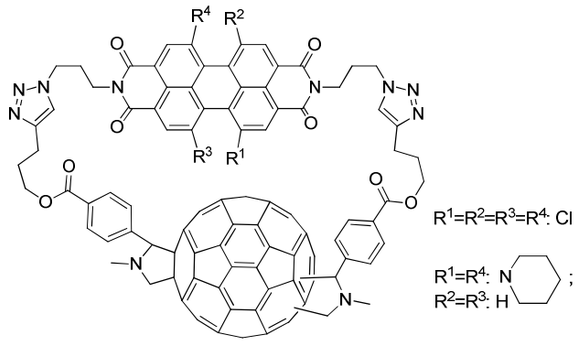

Figure 1. *Chemical structure of macrocyclic [60]Fullerene-PDI systems*

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References

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