Studies of photoinduced processes in a BODIPY-Fullerene Dyad

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Development of bioinspired donor-acceptor ensembles that can undergo efficient photoinduced electron transfer is attracting much interest. These systems may mimic the functions of the photosynthetic reaction center that may be useful for the photochemical conversion of solar energy into fuels and for the development of various molecular optoelectronic devices.[1] In developing electron transfer adducts, the choice of the acceptor has been often directed toward fullerene C_{60} since it displays a good electron affinity both in the ground and in the excited states. Its weak reorganization in electron transfer increases also the rate of the photoinduced charge process while reducing the recombination. Recently, BODIPY have attracted notable attention because of both their high chemical stability and their convenient electronic properties, such as high absorption coefficients and emission quantum yields.[2] Donor-acceptor dyad composed of BODIPY and a C_{60} fullerene has been newly synthesized and characterized. The photoinduced events in this system was studied by absorption and fluorescence spectroscopies and transient absorption spectroscopy at nanosecond scale. The photophysical properties of this dyad in solution will be presented and compared with that of BODIPY and fullerene reference units. The next step is to immobilize this BODIPY-C_{60} dyad on the gold surface in order to ensure electron transfer in one direction for a better generation of photocurrent.

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References:

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