

ADVANCES IN PHOTON-BASED TECHNOLOGIES : SOLAR ENERGY MATERIALS

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During the last two decades, the photon-based technologies such as photoelectronics, nonlinear optical materials and photocatalytic systems as well as artificial photosynthetic systems to utilize the vast and limitless solar energy have been developed very actively. Nevertheless, in the view point of practical use, the advent and improvement of these technologies are still far to go. This is generally due to lack of meticulous studies of the photofunctional solid materials to have high photon-to-electron conversion efficiencies with respect to the solar radiation wavelength range. The effective development of these new techniques will depend on a complete understanding of the fundamental mechanisms and dynamics of the photoinduced electron transfer in the heterogeneous systems. Thus, in this paper, photophysical studies of various methods to control the photoinduced electron transfer in different heterogeneous systems will be described.