ductive and oxidative cycles through a reversible redox couple, since all the above systems used sacrificial donors or acceptors. The options include reversion to an electrode system or simultaneous hydrogen and oxygen evolution at a particulate photochemical diode. The latter route is unlikely to be practical. The only alternative to wired electron transport is electrolyte transport in a flow system involving localized catalysts. The advantages and difficulties of these alternatives should be discussed.

## Photosensitized electron transfer reactions in organized interfacial systems

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The separation of photoproducts formed in photosensitized electron transfer reactions is essential for efficient energy conversion and storage. The organization of the components involved in the photoinduced process in interfacial systems leads to efficient compartmentalization of the products. Several interfacial systems, *e.g.* lipid bilayer membranes (vesicles), water-in-oil microemulsions and a solid $SiO_2$ colloidal interface, were designed to accomplish this goal.

An electron transfer across a lipid bilayer membrane leading to the separation of the photoproducts at opposite sides of the membrane is facilitated by establishing a transmembrane potential and organizing the cotransport of cations with specific carriers.

Colloidal $SiO_2$ particles provide a charged interface that interacts with charged photoproducts. By designing a system that results in oppositely charged photoproducts, a retardation of recombination by the charged interface can be produced. The photosensitized reduction of a neutral acceptor by positively charged sensitizers is described. The reactions are substantially enhanced in the $SiO_2$ colloid compared with in the homogeneous phase. The effect of the $SiO_2$ interface is attributed to a high surface potential that results in the separation of the intermediate photoproducts. The quantum yields of the photosensitized reactions are correlated with the interfacial surface potential, and the electrical effects of other charged interfaces such as micelles are compared with those of $SiO_2$.

The possible utilization of the energy stored in the stabilized photoproducts in further chemical reactions is discussed. Special attention is given to the photodecomposition of water.