

Fullerenes: Multitask Components in Molecular Machinery

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Molecular machines are molecular-scale devices that carry out predetermined tasks derived from molecular motion. A versatile prototype of such nanomachines displays an analogous structure to that of an abacus, in which the ring component can be placed in different positions under controlled conditions. These systems have been named molecular shuttles and are basic components in molecular machinery. The preparation and behaviour of molecular shuttles stoppered with fullerenes will be discussed in detail, focusing on how fullerenes can be applied to monitor and to induce molecular motion.¹ Also, it will be illustrated how such motion can be employed to modulate the physicochemical properties of molecules such as light-driven electron transfer events,² non-linear optical properties,³ fluorescence,^{2,4} electrochemical potential^{4,5} and chemical stability.⁶

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