Controlling single-molecule-level chemical reactions at designated positions*

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For several years, we have been studying how to control single-molecule-level chemical reactions at designated positions. The studies have been mainly made for the following two kinds of chemical reactions: 1) Wiring a single functional molecule at a given position with two electrically conductive linear polymer molecules[1-7] and 2) reversibly controlling the creation and annihilation of chemical bonding between two or three C_{60} molecules at a designated position in a thin C_{60} molecular film[8-10]. Recently, we have obtained remarkable progress in both 1)[7] and 2)[10]. Namely, it has been revealed that 1) we can ensure firm covalent bonding between a targeted functional molecule and wired conductive polymer molecules[7] and 2) the formation of the covalently bonded dimer and trimer of C_{60} molecules can be controlled at will[10].

References

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