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Single-molecule chemistry explored by electrical measurement

Single-molecule junctions, where a target molecule bridges nanogap between metallic electrodes, offer unique opportunities to observe single-molecule properties. Such studies open up ways for pursuing molecular electronics to utilize molecular entities as circuit elements. Single-molecule studies are also beneficial in developing novel sensing technologies with an ultimately high sensitivity. In this seminar, I will introduce several studies conducted with biomolecules enabling realization of sophisticated functionalities. These include single-molecule electronic devices exploiting the superior electrical conductivity of DNA [1,2]. The development of single-molecule detection of biomolecules[3,4] will be also discussed for biomedical applications.

References

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