

## **Molecular Electronics; Dream or Future Reality?**

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Molecular electronics is considered as a future technology that will open up new era. The basic idea of molecular electronics is to use individual molecules as building blocks for nanometer-scale electrical circuits. Main advantage of molecular electronics is functional system design, size reduction, low power consumption, and high operational speed. The subject broadly concerns the exploitation of various molecular materials in electronic and information devices.

From the first pioneering research of molecular conduction in the late 1940s by Chemistry Nobel Laureate Robert S. Mulliken and Medicine and Physiology Nobel Laureate Albert Szent-Gyorgi, many progressive research results in the electrical conduction and device application of molecules have been achieved. Also, there are still many scientific interests including charge transport mechanism between molecules, electrical energy level in molecular systems, electrical contact mechanism, electrical conduction type, quantum transport and so on.

In this presentation, the progress and prospects of molecular electronics is first discussed. Several examples of ongoing research that could have an impact on nano and information technology are then described. This is followed by some speculation on the possibilities for so called molecular scale electronic systems.