Towards Molecular Logic Machines Using Inter And Intra Molecular Dynamics

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Abstract

We will present concrete examples, up to the level of a full adder, of concatenated logic gates that are operated on different parts of a molecule or on different molecules that are coupled. The proposed scheme uses the (optical) excitation of molecular levels and their intramolecular and intermolecular dynamics to connect several logic gates. We will then show that it is possible to implement finite state and Turing machines at the molecular level optically using the dynamics of a three-level system. Finally, an implementation of a search algorithm by chemical kinetics will be discussed.