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DEVELOPMENT OF SINGLE ELECTRON PUMP FOR SINGLE PHOTON SOURCE

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Development of single photon source is one of the hot issues in the quantum information community because many of the quantum information theories are assuming the presence of single photon source but only a few papers have been reported so far for the development of solid-state single photon source (SSPS). The key idea of SSPS is utilizing the single photon emission phenomena observed in the process of single electron-hole recombination. Two different kinds of single electron pump have been proposed so far for the injection of single electron into hole reservoir which results in single photon emission. We will present our research results on the development of acousto-electric single electron pump using one-dimensional (1D) nano-structures such as GaAs 1D channel or carbon nanotub