Seven lecture

Scanning and switching

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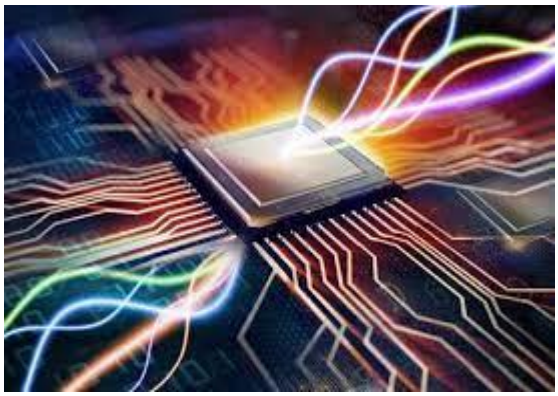
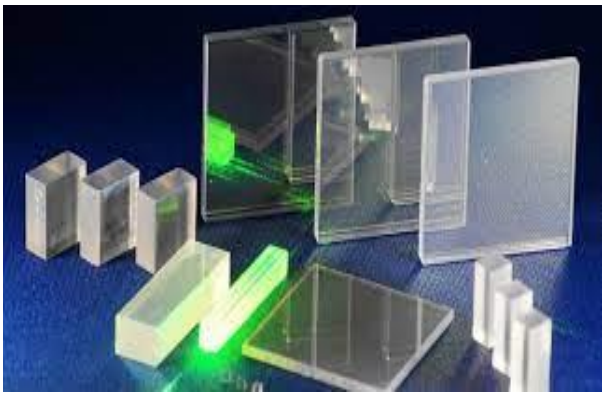
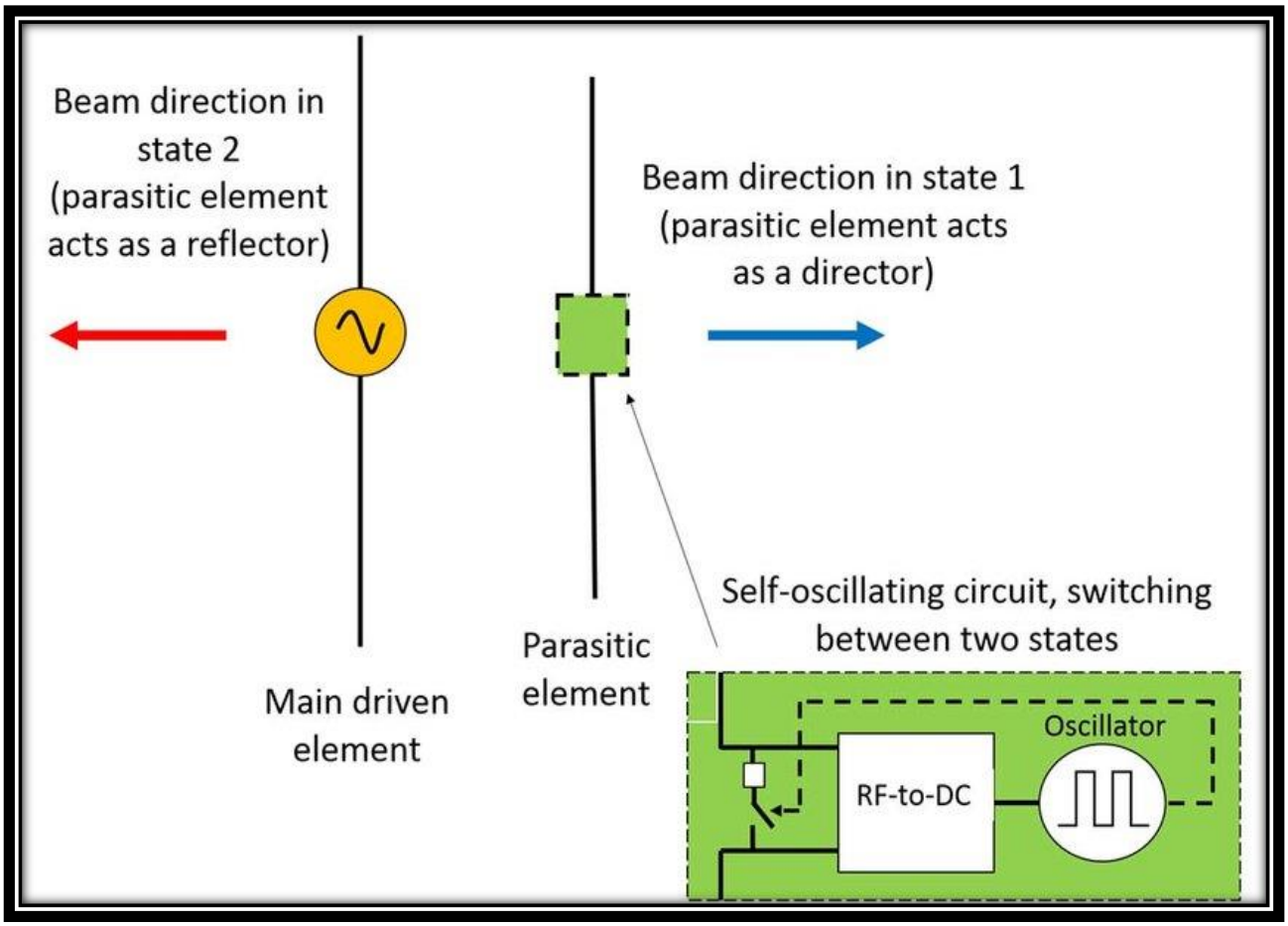
2022- 2023

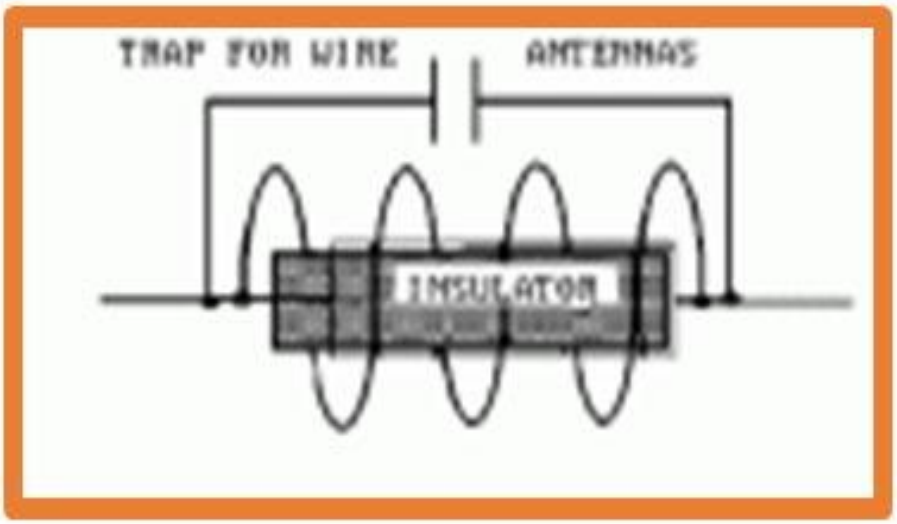
Scanning and switching

Scanning tunneling microscopy and spectroscopy (STM/S) was utilized to study the resistive switching (RS) effect in Nb-doped SrTiO3 (STON). It was found that the RS effect could be realized on the STON surface by applying an appropriate bias on the STM tip, and the RS block could be controlled at nanometer scale. The electrode contact effect on the RS process could be excluded according to the STM method. More importantly, the investigation of scanning tunneling spectroscopy combined with the measurement of x-ray photoelectron spectroscopy demonstrated that the oxygen migration should be the dominant mechanism for the variation of electronic structure during the RS process, which can explain the origin of RS in this oxide. These results can be helpful for both the understanding of RS and its applications.






Beam direction in state 2 (parasitic element acts as a reflector)
Beam direction in state 1 (parasitic element acts as a director)
Main driven element
Parasitic element
Self-oscillating circuit, switching between two states
Oscillator
RF-to-DC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