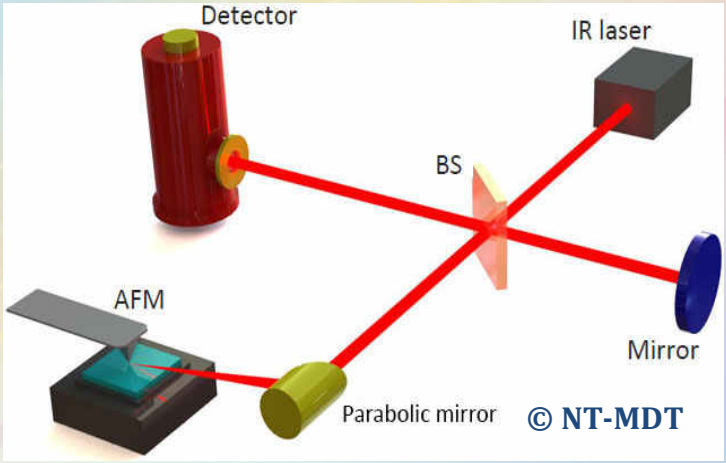
Brain and Beyond: Neuromorphic memory devices

The human brain is one of the final frontiers for technological innovation. Neuromorphic devices attempt to model in a phase changed materials the massively parallel way the human brain process information as billions of neurons and trillions of synapses respond to sensory inputs such as visual and audio stimuli. The chips incorporate brain-inspired models called neural networks. The research of neuromorphic devices on top priorities at various universities, research centers, and corporate labs like IBM. The success of these universal efforts will be a next giant leap of human that will govern the emergence of new frontier like "artificial intelligence".



For the very first time in India, a research team led by Dr. Shrawan Mishra will carry out the advanced research in the field of the fabrication and design of the prototype Mott materials based field effect transistors (FETs), which will display synapse like characteristic. Recently Government of India, Ministry of Science & Technology has awarded his research team a special grant worth Rs 1.01 Crore under "Device Development Program" to allow smooth conduct of this high-end research. Continuing to improve the functionalities of such Mott-FETs requires faster transistor means a search of materials having enhanced and controlled charge dynamics. Grant will also allow assembling a near field microscope in institute that enables the researcher to access the equilibrium/non-equilibrium charge dynamics in the Mott materials.

Principal Investigator: Dr. Shrawan Mishra, Assistant Professor
School of Materials Science and Technology, IIT, (BHU), Varanasi
Email:shrawan.mst@iitbhu.ac.in