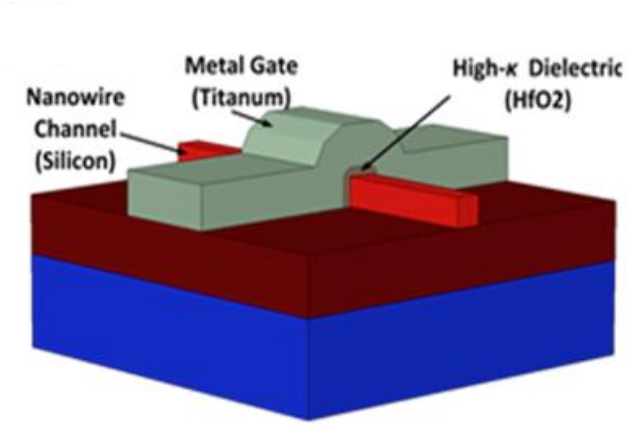
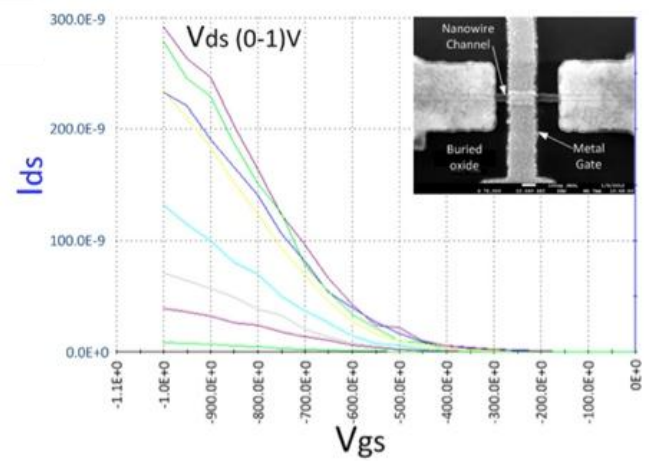
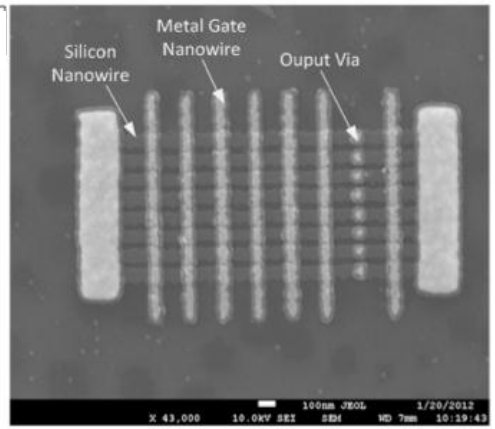
Reconfigurable Nanowire Fabric for Computation: Simulations and Experimental Prototyping

The Reconfigurable Nanowire Fabric is targeted as a scalable alternative to CMOS FPGAs. Logic and memory functionalities can be mapped on to programmable nanowire arrays with reconfigurable cross-nanowire field effect transistor (xnwFETs) crosspoints. Design choices across device, circuit and architecture level are geared towards reducing manufacturing requirements – junctionless xnwFET devices eliminate the need for stringent control of doping profile, regular arrays with limited customization imply mitigated overlay precision requirements, novel circuit styles eliminate the need for arbitrary fine-grain sizing, doping and routing. Furthermore, this fabric uses a fine-grain device-level reconfiguration approach that could have an order-of-magnitude area/power/performance improvement vs. conventional schemes.







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