

Objectives

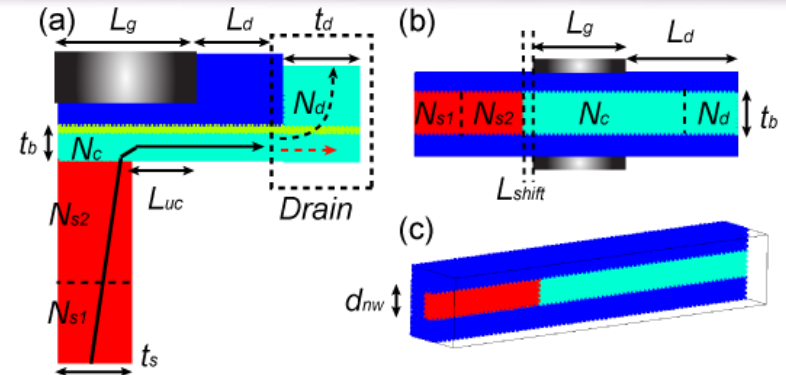
- Comparison of device performances for L-shaped vertical TFETs, UTB TFETs and nanowire TFETs

Methods

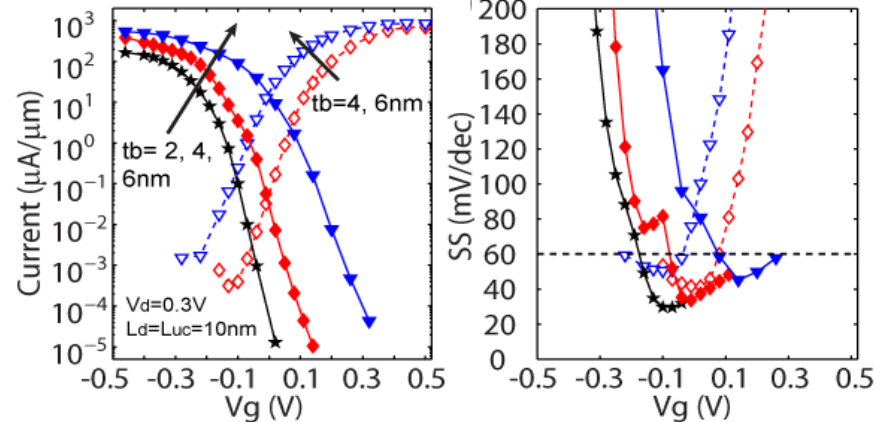
- Semi-classical potential with corrected parameters
- Non-equilibrium Green's Function

Results

- L-shaped TFETs show best performance among III-V TFETs
- Scaling of L-shaped TFETs limited by undercut lengths
- Current of UTB TFETs affected by source-gate coupling
- NW TFETs suffer from small current due to strong confinement



Device geometries and L-shaped TFET IV-characteristics



	t_b	SS_{min}	I_{on}/I_{max}	I_{off}	L_g	I_{on}/I_{off}
L-nTFET	4	41.5	137.8/693	1e-3	20	1.3e5
L-pTFET	2	29.6	105.7/174	1e-3	20	1.0e5
n-UTB	4	87.4	1.4/18.3	1e-3	10	1.4e3
P-UTB	4	69.4	4.1/21.4	1e-3	10	4.1e3
n-NW*	3	79.5	0.025/0.057	3.2e-5	10	7.8e2
p-NW*	4	61.1	1.28/4.89	1.9e-4	10	6.7e3