

## Nano spot analysis on nanopillar transistor for room temperature application

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Development of room temperature quantum transistor (SET) is important for next generation nanoelectronics. In this work, we use high resolution transmission-electron-microscope (TEM), and energy-dispersive-x-analysis (EDX) to analyse the multilayer of SiN<sub>x</sub>/Si/SiN<sub>x</sub> which is to be used in a new type and vertical SET as shown in Fig. 1 [1,2]. In Fig. 2, the analysis shows that each layer thickness can be controlled with precision down to ~3nm. This is critical as we will use their elastic property to fabricate electromechanical devices that can convert dc voltages into ac currents in nano circuitry.

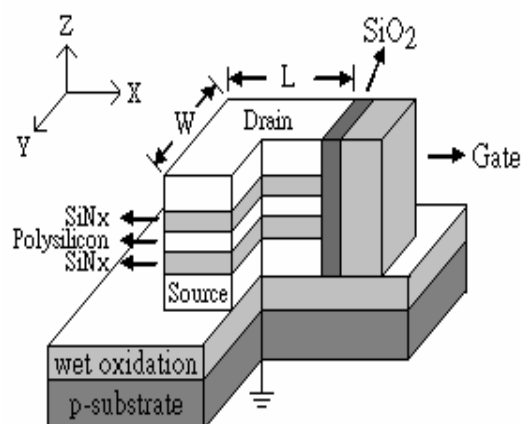


Fig. 1 Vertical transistor.

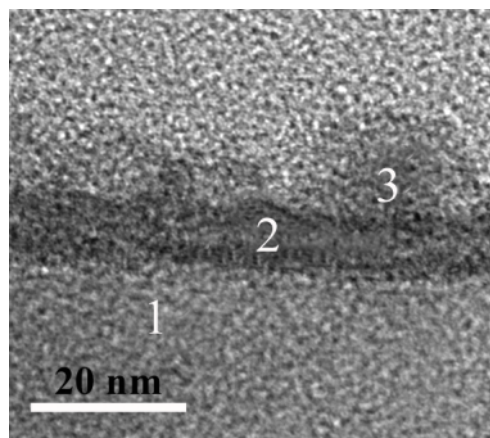


Fig. 2 TEM picture of SiN<sub>x</sub>/Si/SiN<sub>x</sub> multilayer.

### References

- [1] Y. M. Wan et al., Appl. Phys. Lett. 87, 123506 (2005).
- [2] Y. M. Wan et al., Appl. Phys. Lett. 89, 053515 (2006).