

AN INTEGRATED CIRCUIT DESIGN FOR SILICON-NANOWIRE READ OUT CIRCUIT

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ABSTRACT

Put your abstract here.

1. INTRODUCTION

Among many kinds of one-dimensional nanostructure, silicon nanowire(SiNW) has been highly interested in for its feasibility to be integrated into electronic devices. Many researches of fabrications and electrical properties have been done [1]. And since the first time it was introduced to the biosensor field in 2001[2], a promising candidate for ultra-sensitive, real-time and label-free sensor device it became. While some great advances on device design were made[?], works of systems-level engineering of devices is still insufficient. In this work, a read-out circuit based on “constant current” idea is proposed. Some post-simulation results are showed.

2. DESIGN CONCEPT

Conventionally, nanowire is treated as a simple resistance. The read out circuits are targeted on ultra-low current variance measurement [4] or large resistance detecting range [5,6]. In this work, nanowire is treated as a complete field-effect transistor(FET). The gate *end* is taken into consider. And the read out circuit is design for measuring the variance of current, or more specifically: finding out the transconductance of nanowire that changes with analytics concentration.

2.1. Subheadings

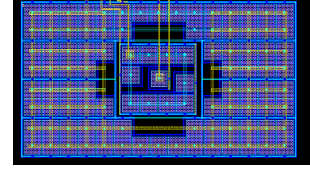
Subheadings should appear in lower case (initial word capitalized) in boldface.

2.1.1. Sub-subheadings

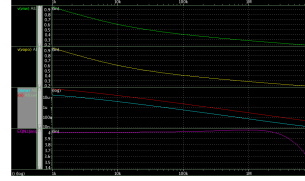
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3. CONCLUSION

Put your conclusion here.



(a) Result 1



(b) Results 3

(c) Result 4

Fig. 1. Example of placing a figure with experimental results.

4. REFERENCES

- [1] Neil P. Dasgupta, Jianwei Sun, Chong Liu, Sarah Brittman, Sean C. Andrews, Jongwoo Lim, Hanwei Gao, Ruoxue Yan, and Peidong Yang, “25th anniversary article: Semiconductor nanowires – synthesis, characterization, and applications,” *ADVANCED MATERIALS*, vol. 26, no. 14, pp. 2137–2184, Apr. 2014.
- [2] Yi Cui, Qingqiao Wei, Hongkun Park, and Charles M. Lieber, “Nanowire nanosensors for highly sensitive and selective detection of biological and chemical species,” Aug. 2001, vol. 293, pp. 1289–1292.