

Peer Review

Review of: "A High-Performance All-Silicon Photodetector Enabling Telecom-Wavelength Detection at Room Temperature"

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The work is good, and the author's findings are also very promising, as they help device developers to design Si-based PDs for optical communication. However, I have some suggestions that could help improve the readability of this manuscript. I recommend accepting this work after some modifications.

1. When the authors talk about photonic integrated circuits, they should discuss the performance of several GeSn-based PDs, as these PDs can be strong contenders in a market dominated by III-V and II-VI PDs. [10.1016/j.physe.2018.10.012, 10.1016/j.physe.2019.113692, 10.3390/s22113978]
2. Another important thing is that in recent studies, researchers discuss a unique momentum-space separation property of group-IV alloys that helps to improve the performance of group-IV alloy-based PDs [10.1063/5.0063179, 10.1109/JSTQE.2024.3419839]. The inclusion of those discussions can improve the readability of this work.
3. Why did the authors choose -9 V? Is there any device performance degradation after the -9 V bias? If so, then please mention this, as it can be good for readers to know about the maximum range of that device.
4. The inclusion of a comparative study of the signal-to-noise ratio with other Si-based PDs can be helpful for readers to understand the improvement in performance.
5. Can the authors discuss the state of the art of the reported different group-IV PDs and compare them with their device?

Declarations

Potential competing interests: No potential competing interests to declare.