

Peer Review

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

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I have read this manuscript carefully. These authors proposed a grating- and waveguide-coupled silicon-based deep-level Te-doped pin photodetector, operating at the telecom wavelength (1550nm). This work is interesting for photodetector designers. However, I think several modifications are necessary to publish in Qeios.

1. For the proposed pin photodetector operating at 1550nm, there needs to be a grating coupler to change the closely vertical incident light into a horizontal direction. Can you suggest specific design parameters for the grating coupler to enhance clarity in this manuscript?
2. The silicon-based Te-doped pin photodetector proposed in this manuscript operates at -9V to achieve good sub-bandgap absorption under 1550nm. It aims to seamlessly integrate with conventional electronic processors, which always work at 1.8V or 3.3V. The authors are hoped to discuss if the big difference between the operating voltages would affect the optoelectronic integration. Could you suggest some potential solutions to reduce the operating voltage while maintaining performance?
3. I hope the authors present a comparison between the fabricated pin photodetector and other reported Si-based detectors for 1550 nm detection to prove its high absorption performance further.

Declarations

Potential competing interests: No potential competing interests to declare.