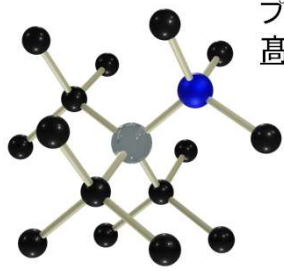


プロジェクトメンバー: 1 電気・電子情報工学系, 2 東大大学院工学系研究科, 3 IRES²
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NV magnetometer^[1]

- 😊 High spatial resolution
- 😊 Robust to harsh environment
- 😊 High intensity/freq. range

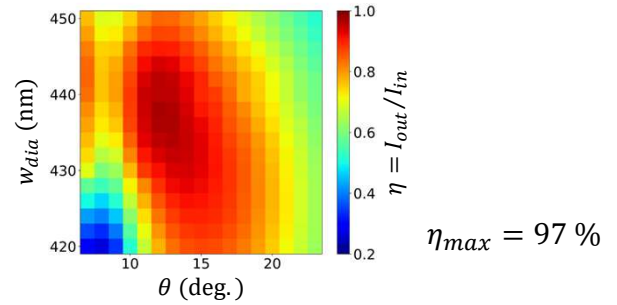
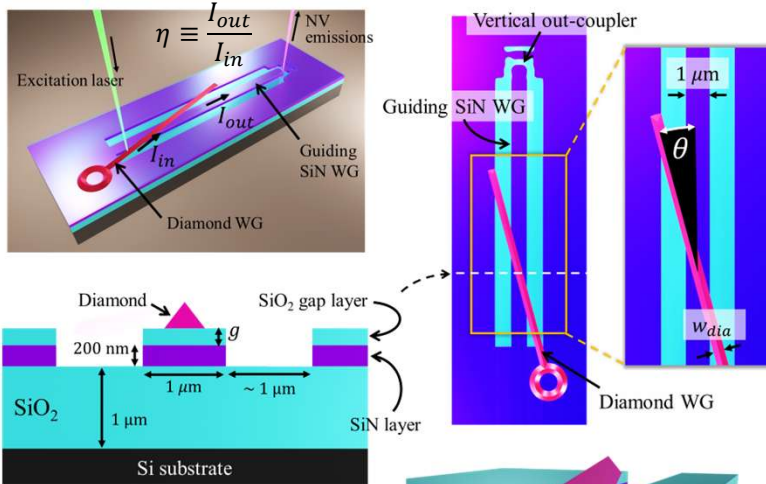
Diamond photonics^[2]

- 😊 Efficient optical in/out
- 😊 Packaging on a chip
- 😞 Low quality and scalability

Hybrid system^[3]

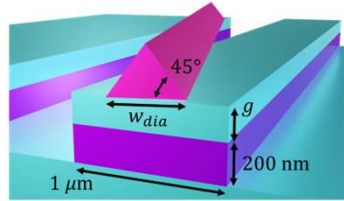
- 😊 High performance
- 😞 Non-scalable integration

This work: scalable hybrid integration



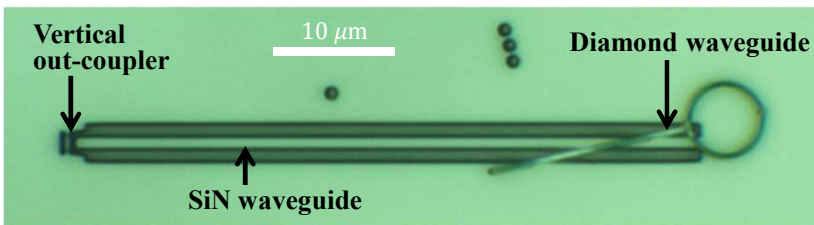
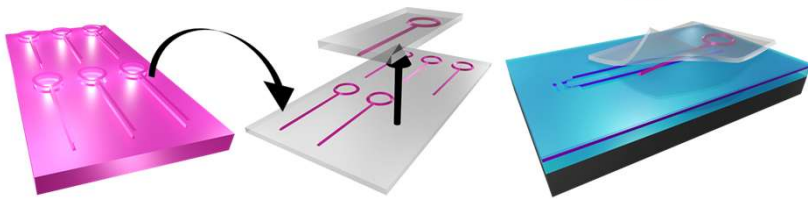
Coupler Design based on ref^[4]

- 😊 Alignment tolerant

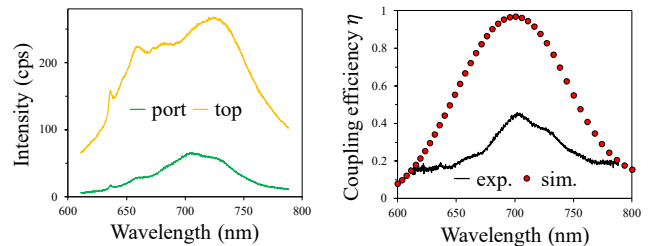
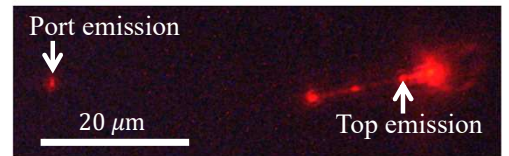
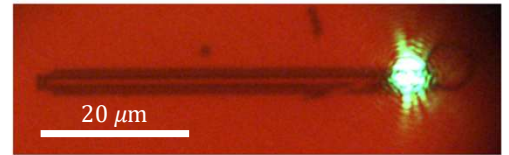


Transfer printing based on ref^[5]

- 😊 High yield



Demonstration of waveguide-waveguide coupling



Summary

- Diamond waveguide was hybrid-integrated in a scalable manner.
- Alignment-tolerant coupling was demonstrated.

K. Takada, et al., Opt. Express **33**, 22769 (2025).

Reference:

[1] J. F. Barry, et al., Phys. Rev. Appl. **22**, 044069 (2024). [2] P. K. Shandilya, et al., J. Light. Technol. **40**, 7538 (2022). [3] R. Katsumi, et al., Commun. Eng. **4**, 85 (2025). [4] S. Bandyopadhyay, and D. Englund, arXiv:2110.12851 (2021). [5] R. Katsumi, et al., Commun. Mater. **6**, 49 (2025).

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