

Lasing Reporting Summary

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ü Experimental design

Please check: are the following details reported in the manuscript?

1. Threshold

Plots of device output power versus pump power over a wide range of values indicating a clear threshold

☐ Yes

☒ No

No device was fabricated in the manuscript.

2. Linewidth narrowing

Plots of spectral power density for the emission at pump powers below, around, and above the lasing threshold, indicating a clear linewidth narrowing at threshold

☐ Yes

☒ No

No line width narrowing observed in this work.

Resolution of the spectrometer used to make spectral measurements

☐ Yes

☒ No

No line width narrowing observed in this work.

3. Coherent emission

Measurements of the coherence and/or polarization of the emission

☒ Yes

☐ No

The operating conditions can be found in the spectroscopic characterization part in Experimental Section.

4. Beam spatial profile

Image and/or measurement of the spatial shape and profile of the emission, showing a well-defined beam above threshold

☐ Yes

☒ No

Beam spatial profile measurement is not involved in this work.

5. Operating conditions

Description of the laser and pumping conditions
Continuous-wave, pulsed, temperature of operation

☒ Yes

☐ No

The operating conditions can be found in the spectroscopic characterization part in Experimental Section.

Threshold values provided as density values (e.g. W cm⁻² or J cm⁻²) taking into account the area of the device

☐ Yes

☒ No

No device was fabricated in the manuscript.

6. Alternative explanations

Reasoning as to why alternative explanations have been ruled out as responsible for the emission characteristics
e.g. amplified spontaneous, directional scattering; modification of fluorescence spectrum by the cavity

☐ Yes

☒ No

SHG and Raman scattering are nonlinear optical processes. They appear at particular spectral regions.

7. Theoretical analysis

Theoretical analysis that ensures that the experimental values measured are realistic and reasonable
e.g. laser threshold, linewidth, cavity gain-loss, efficiency

☐ Yes

☒ No

The experimental values are consistent with previous reports.

8. Statistics

Number of devices fabricated and tested

☐ Yes

☒ No

No device was fabricated in the manuscript.

Statistical analysis of the device performance and lifetime (time to failure)

☐ Yes

☒ No

No device was fabricated in the manuscript.

