

Deterministic Creation of Single Photon Emitting Interface Emitters

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Categories:

- Electrical Engineering
- Micro & Nanotechnologies

Keywords:

- Nanophotonics
- Photonic
- Photonic Devices
- Single-Photon

Researchers at Purdue University have developed a method for the deterministic creation of single photon emitters. This method offers a solution to one of the primary limitations in this field, as it is highly scalable and capable of producing millions to billions of single photon emitters on a standard wafer with subwavelength accuracy. The researchers grew SiN on SiO₂ films using High Density Plasma Enhanced Chemical Vapor Deposition (HDPCVD), performed lithography defined nanopatterning, and post annealing using Rapid Thermal Annealing (RTA) to create lithographically defined single photon emitters. Potential applications of this technology include quantum information technology, communications, sensing, and security.

Advantages:

- Scalable for industrial needs (millions to billions of emitters on a standard wafer)
- High resolution (+/- 85 nm)

Applications:

- Quantum Information Technology
- Quantum Sensing
- Quantum Communication
- Quantum Integrated Circuits
- Quantum Security

People:

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