

## Fabrication of two dimensional photonic crystal micro and nanocavities: from ultra low threshold lasers to solid-state quantum light emitters

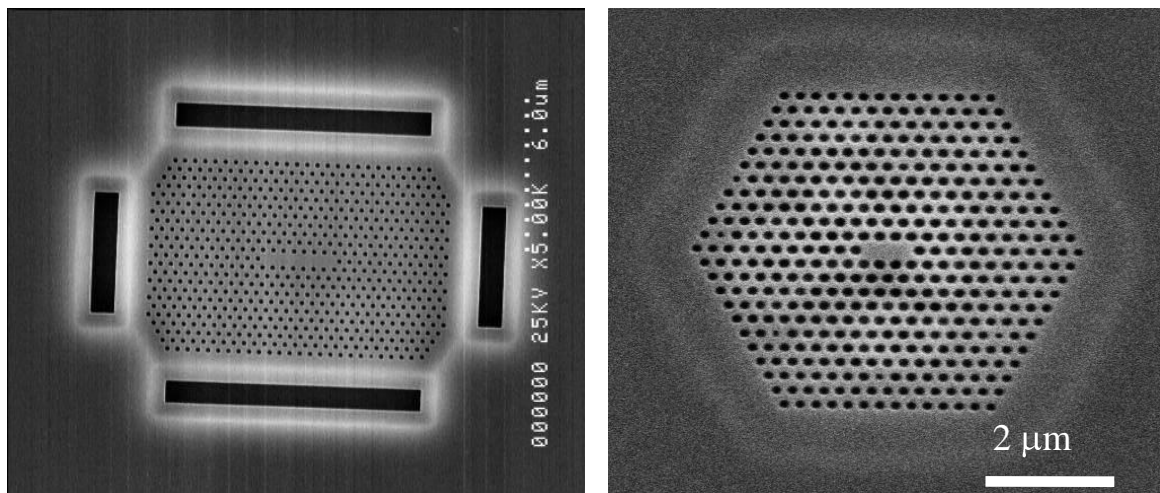
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Two-dimensional photonic crystal lasers have been fabricated on III-V semiconductor slabs. Different structures based in the coupling of light between nanocavities have been fabricated like the hybrid lattice [1] or laser emitters with high quality factor L7 microcavities [2] and very low threshold values. The capability of confining light in very small dimensions allows for enhanced effects on cavity-QED. Photonic crystal cavities have been fabricated on self-assembled quantum nanostructures active material (like quantum rings and quantum dots) for the first time with special attention to the control of the polarization, quality factor and emission wavelength [3]. These structures open new ways for emission of single photons, emission of entangled photon pairs and optical quantum gates.



**Fig.1.** Left: L7-type microcavity fabricated on an InP substrate with quantum wires in the active region. Right: L3-type cavity fabricated on a GaAs substrate with quantum rings.

### References

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