IWAMOTO LAB.

Quantum Nanophotonics and Topological Photonics

Department of Informatics Electronics

Quantum Nanophotonics
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Control of Photons by Photonic Nanostructures and its Applications

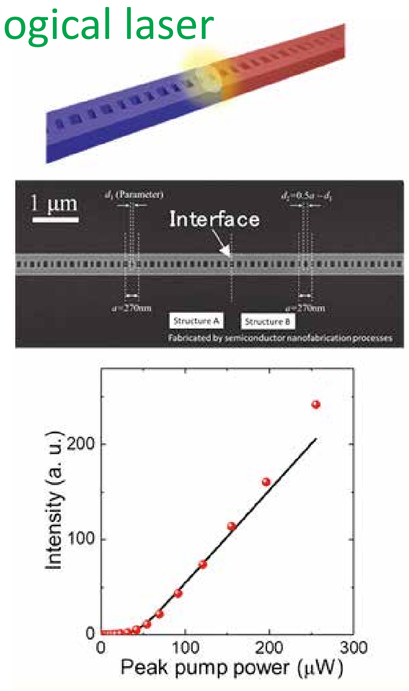
Overview : We are investigating photonic nanostructures including photonic crystals for diverse applications. In particular, we are pursuing unprecedent technologies controlling light and novel photonic devices based on the concept of topology, which provides an intriguing approach to control light. Our research interests also include quantum optics and light-matter interactions in photonic nanostructures, and nanophotonics using diamond materials toward quantum information applications.

Main research subjects :

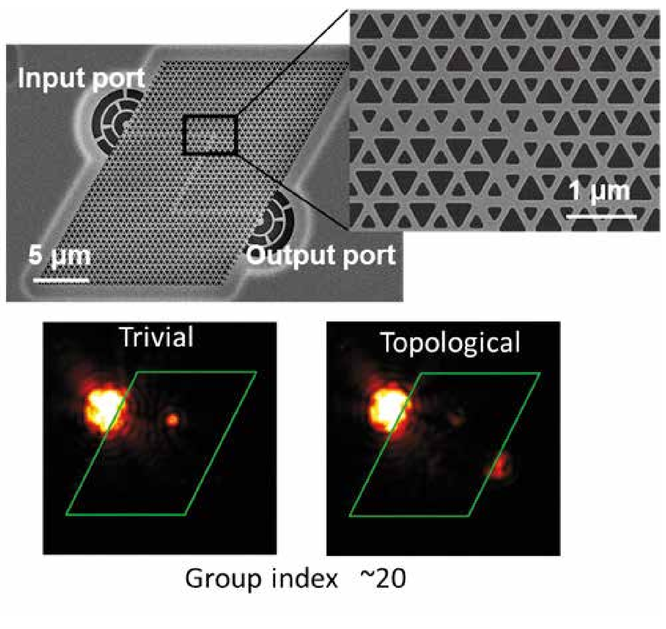
- Design and fabrication technology of photonic nanostructures
- Novel optical phenomena in photonic nanostructures
- Control of light emission properties and quantum nanophotonics
- Topological photonics / phononics, Non-Hermitian optics
- Diamond nanophotonics

Topological Photonics

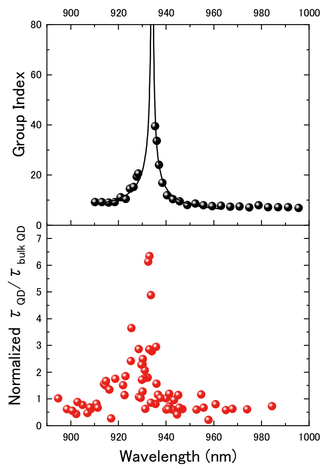
Topological laser



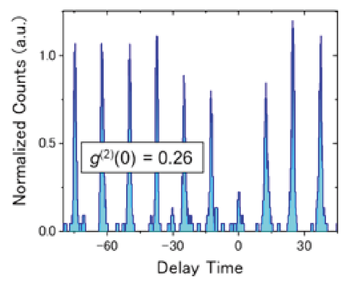
Topological slow-light waveguide



Quantum Nanophotonics



Quantum light sources

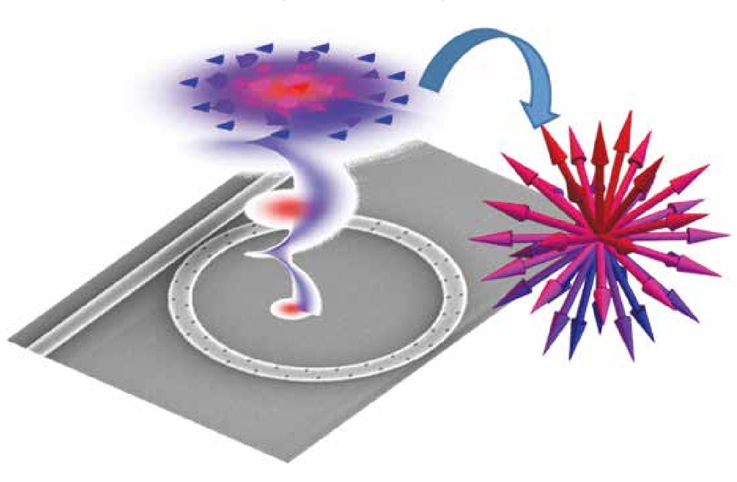


Quantum interface

Structured Light and Singular Optics

Spin-OAM interface

Optical Skyrmion



Diamond Nanophotonics

Diamond photonic crystal nanocavity