**Control of Photons by Photonic Nanostructures and its Applications**

**Overview:** We are investigating photonic nanostructures including photonic crystals for realizing novel control of light and are exploring light-matter interactions in those structures for various applications. We are also studying topological wave engineering aiming at exploration and utilization of the topological properties of classical waves such as light, elastic waves, and sounds. We are collaborating with Holmes Lab and Quantum Dot Lab, Institute for Nano Quantum Information Electronics.

**Main research subjects:**
- Design and fabrication technology of photonic nanostructures
- Control of light emission properties by using photonic nanostructure
- Quantum optics and solid state cavity quantum electrodynamics based on photonic nanostructures
- Control and application of angular momentum of light by photonic nanostructure
- Topological photonics / phononics

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**High Quality Photonic Crystals**

**Control of Light-Matter Interaction using Photonic Nanostructures**

**Control of Optical Orbital Angular Momentum and its Applications**

**Topological Wave Engineering**