



Solid-State Photonics toward Giant Micro-photonics

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Since the first laser invention by Dr. T. Meiman, the solid-state lasers have led to the field of Quantum Electronics due to their highly brightness giant pulse advantages. In this lecture, I'd like to review the Quantum Electronics from the point of view of solid-state lasers includes nonlinear optics:

- 1) Spectroscopy of solid-state laser materials, especially RE^{3+} -ion doped lasers
- 2) Model and design of lasers, especially diode pumped solid-state lasers
- 3) Nonlinear optics, especially wavelength conversion.

After the general topics, we'd like to discuss the recent progress on micro solid-state photonics such as micro-domain and boundary controlled photonic devices, which allow us the giant benefits in the solid-state photonics as polycrystalline laser ceramics and periodically poled devices. Extremely high-brightness laser and wavelength conversion are getting by nano/micro-level controlled materials. Further innovation in micro-domain controlling toward “**Giant Micro-photonics**” should be discussed.

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