

Preface to Volume II

This volume contains five review articles focusing on various but mutually related topics in nanophotonics written by the world's leading scientists. The first article describes near-field excitation dynamics in molecules. A generalized theoretical description of a light-matter interaction is given on the basis of the multipolar Hamiltonian. The second article is devoted to describing experimental results for wavelength up-converting a phonon-assisted excitation process with degenerate beams and non-degenerate beams in dye grains. Application to optical pulse-shape measurement is also reviewed. The third article describes a fabrication method of semiconductor quantum dots, including self-assembly of InAs quantum dots based on the Stranski-Krastanov growth mode. Fabrication and application of ultrahigh-density quantum dots by a strain compensation technique are also reviewed. The fourth article is devoted to single-nanotube spectroscopy and time-resolved spectroscopy for studying novel excitonic properties of single-walled carbon nanotubes. The striking features of excitons in the carbon nanotube, multiple-exciton states, charged exciton formation, and exciton-multiplication are reviewed. The last article describes microfluidic and extended-nano fluidic techniques. It claims that nanophotonics is used as a key technology since the space size becomes smaller than the wavelength in extended-nano space.

This volume is published with the support of Prof. Yatsui of the University of Tokyo, an associate editor. I hope that this volume will be a valuable resource for readers and future specialists in nanophotonics.

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