

Colloidal Nano-Materials for Nanophotonics

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Colloidal spheres at micrometer or nanometer scales have taken much attention due to their potential applications for nanophotonics or nanoelectronics. Over the years, interests in self assembly of micron-sized colloidal spheres for optical applications have led to several experimental schemes that have been developed for making colloidal crystals. For practical applications, such colloidal crystals have been recently fabricated to desirable patterns or shapes at micrometer scales. More recently, small aggregates of colloidal microspheres as new types of building blocks for unusual photonic crystals have been proposed and developed. These small colloidal aggregates, including dimers, tetrahedra, and more exotic forms, have lower symmetry than the spheres. They also offer the possibility of forming unusual colloidal phases and structures, as molecules do.