

Fabrication of Organic/Inorganic Crystalline structure by DNA Self-assembly

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MgCu₂ laves phase have received much attentions, because MgCu₂ laves phase is complementarily composed of diamond structure and pyrochlore structure which are known as wide 3D photonic band gap structure.^[1-2] By removing one structure from laves phase, we can take the other one. In previous study, fabrication of laves phase with preassembled clusters and spheres succeeded.^[3] However, clusters and spheres are all organic materials and it can't be separated. To eliminate one structure, we have to fabricate laves phase with binary colloidal particles. Herein, we will present binary MgCu₂ laves phase with organic particles (Polystyrene, Polymethyl methacrylate) and inorganic particles (titania, silica) through DNA self-assembly method. The colloidal self-assembly method by DNA attraction is very powerful in that DNA can be utilized to freely control the attraction between particles. And also can selectively, complementarily bind depending on the base sequence. Our research allow diamond and pyrochlore structure to be separated from MgCu₂ laves phase. (**Keywords** Laves phase, DNA self-assembly, Diamond structure, Pyrochlore structure, Rutile titania Nanoparticles)

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