

## 高分子球形微粒子合成と顔料への応用

### Polymer Spherical Particle Synthesis Using O/O Emulsion System of Polymer Solution and the Application to Pigment Encapsulation

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#### Abstract

The author demonstrated advanced polymer particle producing methods with oil-in-oil (O/O) emulsion castings utilizing phase separation phenomenon of polymer solution. This method is effective for polymers that only dissolve in polar solvents, which do not form oil-in-water emulsions due to miscibility with water. Furthermore, we have developed this method by O/O emulsion castings to prepare encapsulated pigments in polymer particle. Acrylonitrile-butadiene-styrene (ABS) was used as a transparent matrix polymer, and polyvinyl alcohol (PVA) and N-methylpyrrolidone (NMP) were used as a phase separation polymer and solvent in this work. Since the pigment encapsulated behavior in ABS polymer depended on the pigment materials, we focused on the combination of surface free energy between pigments and polymer. Since the surface energy of ABS is much lower than PVA, low surface energy pigment, such as Phthalocyanine copper, move to ABS/ NMP phase rather than PVA/NMP phase in ternary system, selectively. The surface energy of Pigment Yellow 110 was intermediate value between ABS and PVA, the encapsulation of Pigment Yellow 110 is inefficient.

キーワード：高分子微粒子、オイル-イン-オイルエマルジョン、三成分エマルジョン casting、顔料内包、表面自由エネルギー

**Keywords** : Polymer particle; Oil-in-oil emulsion; Casting in a ternary system; Pigment encapsulation; Surface free energy

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