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学位（博士）論文要旨
(Doctoral thesis abstract)

論文提出者 Ph. D. Candidate	生物システム応用科学府 生物機能システム科学 専攻 博士後期課程 第１ 専修/グループ(Department Course) 平成 28 年度入学(Your Entrance Fiscal Year) 氏名 菊池 秀 ㊞ (Your Name(Family, First) and Seal)				
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論文題目 Title	Morphology Control of Polymer Blend Particles Consisting of Poly(4-butyltriphenylamine) and Poly(methyl methacrylate) ポリ（４－ブチルトリフェニルアミン）とポリ（メタクリル酸メチル）からなるポリマーブレンド粒子の構造制御				

論文要旨（和文要旨(2000字程度)または英文要旨(500words)）
※欧文・和文どちらでもよい。但し、和文の場合は英訳を付すこと。
Write a summary in Japanese (2000 characters) or in English (500words).
If the abstract is written in Japanese, needed to translate into English.

In chapter 1, the author demonstrated that the morphology control can provide novel applications to polymer particles. For instance, the particles with periodic phase separated structure about the same size as wavelength of light are expected to confine the incident light, and can be used as spherical resonator. The author focused on PBTPA as the material for polymer particles to apply the particles as the devices in optical field. High refractive index (n = 1.71 at 633 nm) of PBTPA enhances the light reflection from the interface between the other polymers due to the large gap of the refractive indexes. Enhanced light reflection can improve the efficiency of the optical resonator or other optical devices using light reflection. Solvent evaporation method was chosen to prepare the morphology controlled particles consisting of PBTPA and PMMA, because this method can provide polymer composite particles in a single step without polymerization process. In the following chapters, the various morphologies of phase separated structures in blend particles consisting of PBTPA and PMMA prepared by the solvent evaporation method.

In chapter 2, the author presented the facile fabrication of "inversed core-shell" particles with PMMA core surrounded by PBTPA monolayer via solvent evaporation method. While the core-shell particles with PBTPA core surrounded by PMMA shell were obtained from the toluene solution droplets dispersed in poly(vinyl alcohol) (PVA) aqueous solutions, adding sodium dodecyl sulfate (SDS) into aqueous solution as the surfactant gave inversed core-shell particles with the PBTPA layer with uniformed thickness in circumferential direction.

In chapter 3, the author presented the PBTPA/PMMA blend particles with the various structures including "core-shell", "Janus", "dumbbell like" and "confetti like". Increment of the molecular weight of polymers induced the formation of Janus structured particles. Chloroform solution droplets provided dumbbell like structure due to low interfacial tension between chloroform solution and PVA aqueous solution. Rapid evaporation suppressed the morphological transition due to high viscosity, and formed confetti like particles.

In chapter 4, the author presented the morphology control of the PBTPA/PBTPA-*b*-PMMA/PMMA

blend particles. The both macro- and microphase structure were changed depending on the molecular weight of homopolymers and block copolymers, For instance, the block copolymer dissolved in PMMA homopolymers formed PBTPA microdomains in PMMA macrophase. Adding PBTPA-*b*-PMMA decreased the interfacial tension between PBTPA and aqueous phase, and changed macrophase separated structure from core-shell to Janus or inversed core-shell structure.

In chapter 5, the author presented the morphological transition from core-shell to Janus for phase-separated PBTPA/PMMA solution droplets by UV light irradiation. The rate of transition decreased with increasing polymer concentration and diameter of the droplet. It was also found that the transition was caused by UV light with the wavelength of 365 nm which is mainly absorbed by PBTPA, indicating that this phenomenon is triggered from PBTPA. No transition was observed after heating the dispersion at 40 and 75 °C. This result shows the heat generated by UV lamp is not cause of this structural transition.

（英訳）※和文要旨の場合（300 words）

If the abstract is written in Japanese, needed to translate into English.(300 words)