

복합전기장과 전기분무장치를 통한 PMMA 마이크로/나노파티클 제조방법에 대한 연구

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Research for fabricating micro/nano-size PMMA particles using complex fields and electro spraying

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Key Words: electro spraying(전기분무법), complex electric field(복합전기장), PMMA

Abstract : To fabricate uniform nano/micro size beads by using an electro spraying process, PMMA polymer solution was ejected from a reservoir tip and formed into a suspended droplet by force of controllable syringe pumping. As a complex electric field and newly designed electrodes connected with a nozzle were applied, uniform microsize beads of the solution were obtained from an apex of the Taylor-cone at a nozzle and were traveled towards a target electrode which could provide non-uniform electric field. Moreover by using a 2 axis x-y stage, we could obtain uniform size PMMA beads which were deposited on the thin poly(ethylene terephthalate) film. To understand the effect of process variables, applied field conditions and rheological properties, the morphological pictures of the deposited particles were investigated through the optical and scanning electron microscope.

Review of Computer Simulations with Absolute Nodal Coordinate Formulation for large deformation problems

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절대절점좌표를 이용한 대변형 시뮬레이션 리뷰

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Key Words: Comparison(비교), Experiment(실험), Simulation(시뮬레이션)

Abstract : The current state of the absolute nodal coordinate formulation (ANCF) is reviewed for large-displacement and large-deformation problems in flexible multibody dynamics. This review covers most of the known implementations of different kinds of finite elements including thin and thick planar and spatial beams and plates. Physical experiments were carried out to verify simulation results that show the accuracy of the ANCF applied to real physical problems. And simulation results are compared with experiments having significant geometrical non-linearity. A beam, a plate, a rotating chain, and a rotating strip were compared as examples. Current and further development directions of the ANCF are also briefly outlined.