

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Preparation of uniform-sized block copolymer particles by membrane emulsification JAEMAN SHIN, KAIST, MINSOO KIM, GI-RA YI, Sungkyunkwan University, BUMJOON KIM, KAIST, SUNGKYUNKWAN UNIVERSITY COLLABORATION — Block copolymer (BCP) particles have been intensively studied due to their unique internal and surface structures, but their applications have been limited mainly due to inherent polydispersity in the particle size arising from the fabrication technique. Here, monodisperse polystyrene-*block*-polybutadiene (PS-*b*-PB) BCP particles with unique internal morphology were successfully prepared using Shirasu Porous Glass membrane emulsification. Systematic study on the process parameters in the membrane emulsification, such as membrane pore size, operation pressure, and surfactant concentration was performed to obtain the uniform-sized BCP particles, which generally showed coefficient of variation (CV) value under 10%. Moreover, we successfully extended our method of membrane emulsification to other polystyrene-*block*-poly(4-vinylpyridine) (PS-*b*-P4VP) particles, in which P4VP domains were selectively metallized, producing uniform-sized BCP hybrid particles.

Jaeman Shin
KAIST

Date submitted: 13 Nov 2014

Electronic form version 1.4