

Accepted Manuscript

Synthesis of polystyrene@silica@organosilica hierarchical hybrid particles through seeded emulsion polymerization

X.G. Qiaa, T. Sun, Q.Q. Tang, S.Z. Zhou

PII: S0014-3057(18)30958-3

DOI: <https://doi.org/10.1016/j.eurpolymj.2018.09.042>

Reference: EPJ 8615

To appear in: *European Polymer Journal*

Received Date: 25 May 2018

Revised Date: 27 August 2018

Accepted Date: 21 September 2018

Please cite this article as: Qiaa, X.G., Sun, T., Tang, Q.Q., Zhou, S.Z., Synthesis of polystyrene@silica@organosilica hierarchical hybrid particles through seeded emulsion polymerization, *European Polymer Journal* (2018), doi: <https://doi.org/10.1016/j.eurpolymj.2018.09.042>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Synthesis of polystyrene@silica@organosilica hierarchical hybrid particles
through seeded emulsion polymerization

X. G. Qiao^{1}, T. Sun¹, Q. Q. Tang¹ and S. Z. Zhou^{2*}*

1. College of Chemistry and Chemical Engineering, and Henan Key laboratory of Function-Oriented Porous Materials, Luoyang Normal University, Luoyang 471934, China.
2. School of Chemical Engineering and Energy, Zhengzhou University, Zhengzhou, P. R. China

Corresponding Author:

joexiaoguang@hotmail.com

zhoushuzhen@zzu.edu.cn

ABSTRACT

We reported the synthesis of hierarchical polystyrene@silica@organosilica hybrid particles with different morphologies via seeded emulsion polymerization. Series of organosilica seeds with different core@shell morphologies were first synthesis through the same biphasic sol-gel methods incorporation with a Pickering process. For the Pickering process, tiny silica particles (15 nm) were first formed and then used to stabilize 3-(methacryloxy)propyl trimethoxy silane (γ -MPS) droplets. Various amount of tetraethyl orthosilicate (TEOS) was then delivered in to the aqueous solution carefully to form a biphasic system and formed seeds with different core@shell structures when the up layer disappeared. For the seeded emulsion polymerization, the virous morphologies of the seeds induced different surface hydrophilicity which lead to different monomer swelling process before polymerization, and further result in the different morphologies of the final hybrid particles. Hybrid particles with multi-pod core@shell,

Download English Version:

<https://daneshyari.com/en/article/11032835>

Download Persian Version:

<https://daneshyari.com/article/11032835>

[Daneshyari.com](https://daneshyari.com)